

# C1\_W1\_Lab\_2\_multi-output

April 12, 2021

## 1 Ungraded Lab: Build a Multi-output Model

In this lab, we'll show how you can build models with more than one output. The dataset we will be working on is available from the [UCI Machine Learning Repository](#). It is an Energy Efficiency dataset which uses the building features (e.g. wall area, roof area) as inputs and has two outputs: Cooling Load and Heating Load. Let's see how we can build a model to train on this data.

### 1.1 Imports

```
[1]: try:
      # %tensorflow_version only exists in Colab.
      %tensorflow_version 2.x
    except Exception:
        pass

    import tensorflow as tf
    import numpy as np
    import matplotlib.pyplot as plt
    import pandas as pd
    from tensorflow.keras.models import Model
    from tensorflow.keras.layers import Dense, Input
    from sklearn.model_selection import train_test_split
```

### 1.2 Utilities

We define a few utilities for data conversion and visualization to make our code more neat.

```
[2]: def format_output(data):
      y1 = data.pop('Y1')
      y1 = np.array(y1)
      y2 = data.pop('Y2')
      y2 = np.array(y2)
      return y1, y2

    def norm(x):
```

```

    return (x - train_stats['mean']) / train_stats['std']

def plot_diff(y_true, y_pred, title=''):
    plt.scatter(y_true, y_pred)
    plt.title(title)
    plt.xlabel('True Values')
    plt.ylabel('Predictions')
    plt.axis('equal')
    plt.axis('square')
    plt.xlim(plt.xlim())
    plt.ylim(plt.ylim())
    plt.plot([-100, 100], [-100, 100])
    plt.show()

def plot_metrics(metric_name, title, ylim=5):
    plt.title(title)
    plt.ylim(0, ylim)
    plt.plot(history.history[metric_name], color='blue', label=metric_name)
    plt.plot(history.history['val_' + metric_name], color='green', label='val_' +
↪ metric_name)
    plt.show()

```

### 1.3 Prepare the Data

We download the dataset and format it for training.

```

[3]: # Get the data from UCI dataset
URL = 'https://archive.ics.uci.edu/ml/machine-learning-databases/00242/
↪ENB2012_data.xlsx'

# Use pandas excel reader
df = pd.read_excel(URL)
df = df.sample(frac=1).reset_index(drop=True)

# Split the data into train and test with 80 train / 20 test
train, test = train_test_split(df, test_size=0.2)
train_stats = train.describe()

# Get Y1 and Y2 as the 2 outputs and format them as np arrays
train_stats.pop('Y1')
train_stats.pop('Y2')
train_stats = train_stats.transpose()
train_Y = format_output(train)
test_Y = format_output(test)

```

```
# Normalize the training and test data
norm_train_X = norm(train)
norm_test_X = norm(test)
```

## 1.4 Build the Model

Here is how we'll build the model using the functional syntax. Notice that we can specify a list of outputs (i.e. [y1\_output, y2\_output]) when we instantiate the Model() class.

```
[4]: # Define model layers.
input_layer = Input(shape=(len(train.columns),))
first_dense = Dense(units='128', activation='relu')(input_layer)
second_dense = Dense(units='128', activation='relu')(first_dense)

# Y1 output will be fed directly from the second dense
y1_output = Dense(units='1', name='y1_output')(second_dense)
third_dense = Dense(units='64', activation='relu')(second_dense)

# Y2 output will come via the third dense
y2_output = Dense(units='1', name='y2_output')(third_dense)

# Define the model with the input layer and a list of output layers
model = Model(inputs=input_layer, outputs=[y1_output, y2_output])

print(model.summary())
```

Model: "model"

Layer (type)	Output Shape	Param #	Connected to
input_1 (InputLayer)	[(None, 8)]	0	
dense (Dense)	(None, 128)	1152	input_1[0][0]
dense_1 (Dense)	(None, 128)	16512	dense[0][0]
dense_2 (Dense)	(None, 64)	8256	dense_1[0][0]
y1_output (Dense)	(None, 1)	129	dense_1[0][0]

```
-----
y2_output (Dense)                (None, 1)                65                dense_2[0][0]
=====
```

```
=====
Total params: 26,114
Trainable params: 26,114
Non-trainable params: 0
-----
```

```
-----
None
```

## 1.5 Configure parameters

We specify the optimizer as well as the loss and metrics for each output.

```
[5]: # Specify the optimizer, and compile the model with loss functions for both
      ↪ outputs
optimizer = tf.keras.optimizers.SGD(lr=0.001)
model.compile(optimizer=optimizer,
              loss={'y1_output': 'mse', 'y2_output': 'mse'},
              metrics={'y1_output': tf.keras.metrics.RootMeanSquaredError(),
                       'y2_output': tf.keras.metrics.RootMeanSquaredError()})
```

## 1.6 Train the Model

```
[6]: # Train the model for 500 epochs
history = model.fit(norm_train_X, train_Y,
                    epochs=500, batch_size=10, validation_data=(norm_test_X,
      ↪test_Y))
```

Train on 614 samples, validate on 154 samples

Epoch 1/500

```
614/614 [=====] - 1s 946us/sample - loss: 239.3021 -
y1_output_loss: 110.5221 - y2_output_loss: 126.5585 -
y1_output_root_mean_squared_error: 10.5623 - y2_output_root_mean_squared_error:
11.3022 - val_loss: 46.8658 - val_y1_output_loss: 18.8911 - val_y2_output_loss:
26.5187 - val_y1_output_root_mean_squared_error: 4.4069 -
val_y2_output_root_mean_squared_error: 5.2388
```

Epoch 2/500

```
614/614 [=====] - 0s 141us/sample - loss: 31.9637 -
y1_output_loss: 12.4518 - y2_output_loss: 19.4900 -
y1_output_root_mean_squared_error: 3.5176 - y2_output_root_mean_squared_error:
4.4261 - val_loss: 30.7600 - val_y1_output_loss: 11.8387 - val_y2_output_loss:
18.0213 - val_y1_output_root_mean_squared_error: 3.4830 -
val_y2_output_root_mean_squared_error: 4.3161
```

Epoch 3/500  
614/614 [=====] - 0s 149us/sample - loss: 30.8988 -  
y1\_output\_loss: 10.9908 - y2\_output\_loss: 19.7064 -  
y1\_output\_root\_mean\_squared\_error: 3.3291 - y2\_output\_root\_mean\_squared\_error:  
4.4515 - val\_loss: 53.0378 - val\_y1\_output\_loss: 18.7838 - val\_y2\_output\_loss:  
33.3529 - val\_y1\_output\_root\_mean\_squared\_error: 4.3703 -  
val\_y2\_output\_root\_mean\_squared\_error: 5.8257  
Epoch 4/500  
614/614 [=====] - 0s 135us/sample - loss: 28.9106 -  
y1\_output\_loss: 10.2905 - y2\_output\_loss: 18.5962 -  
y1\_output\_root\_mean\_squared\_error: 3.1996 - y2\_output\_root\_mean\_squared\_error:  
4.3213 - val\_loss: 36.8237 - val\_y1\_output\_loss: 11.4514 - val\_y2\_output\_loss:  
24.5862 - val\_y1\_output\_root\_mean\_squared\_error: 3.4275 -  
val\_y2\_output\_root\_mean\_squared\_error: 5.0076  
Epoch 5/500  
614/614 [=====] - 0s 137us/sample - loss: 22.4040 -  
y1\_output\_loss: 8.8717 - y2\_output\_loss: 13.5015 -  
y1\_output\_root\_mean\_squared\_error: 2.9904 - y2\_output\_root\_mean\_squared\_error:  
3.6690 - val\_loss: 50.7975 - val\_y1\_output\_loss: 15.1419 - val\_y2\_output\_loss:  
34.7563 - val\_y1\_output\_root\_mean\_squared\_error: 3.9326 -  
val\_y2\_output\_root\_mean\_squared\_error: 5.9441  
Epoch 6/500  
614/614 [=====] - 0s 130us/sample - loss: 23.2038 -  
y1\_output\_loss: 8.9614 - y2\_output\_loss: 14.2087 -  
y1\_output\_root\_mean\_squared\_error: 2.9984 - y2\_output\_root\_mean\_squared\_error:  
3.7701 - val\_loss: 35.3047 - val\_y1\_output\_loss: 11.0470 - val\_y2\_output\_loss:  
23.2574 - val\_y1\_output\_root\_mean\_squared\_error: 3.3693 -  
val\_y2\_output\_root\_mean\_squared\_error: 4.8942  
Epoch 7/500  
614/614 [=====] - 0s 135us/sample - loss: 21.6800 -  
y1\_output\_loss: 8.5452 - y2\_output\_loss: 12.9947 -  
y1\_output\_root\_mean\_squared\_error: 2.9315 - y2\_output\_root\_mean\_squared\_error:  
3.6175 - val\_loss: 29.4495 - val\_y1\_output\_loss: 10.5005 - val\_y2\_output\_loss:  
18.3592 - val\_y1\_output\_root\_mean\_squared\_error: 3.2760 -  
val\_y2\_output\_root\_mean\_squared\_error: 4.3264  
Epoch 8/500  
614/614 [=====] - 0s 136us/sample - loss: 20.6619 -  
y1\_output\_loss: 8.3765 - y2\_output\_loss: 12.5502 -  
y1\_output\_root\_mean\_squared\_error: 2.8846 - y2\_output\_root\_mean\_squared\_error:  
3.5130 - val\_loss: 57.1048 - val\_y1\_output\_loss: 15.5489 - val\_y2\_output\_loss:  
40.5465 - val\_y1\_output\_root\_mean\_squared\_error: 3.9827 -  
val\_y2\_output\_root\_mean\_squared\_error: 6.4221  
Epoch 9/500  
614/614 [=====] - 0s 128us/sample - loss: 22.8989 -  
y1\_output\_loss: 8.9479 - y2\_output\_loss: 14.0349 -  
y1\_output\_root\_mean\_squared\_error: 2.9669 - y2\_output\_root\_mean\_squared\_error:  
3.7545 - val\_loss: 23.2227 - val\_y1\_output\_loss: 8.7974 - val\_y2\_output\_loss:  
13.7027 - val\_y1\_output\_root\_mean\_squared\_error: 3.0088 -

```

val_y2_output_root_mean_squared_error: 3.7643
Epoch 10/500
614/614 [=====] - 0s 129us/sample - loss: 21.2458 -
y1_output_loss: 8.4409 - y2_output_loss: 13.2124 -
y1_output_root_mean_squared_error: 2.8782 - y2_output_root_mean_squared_error:
3.6003 - val_loss: 20.4897 - val_y1_output_loss: 7.9982 - val_y2_output_loss:
12.1382 - val_y1_output_root_mean_squared_error: 2.8611 -
val_y2_output_root_mean_squared_error: 3.5077
Epoch 11/500
614/614 [=====] - 0s 128us/sample - loss: 23.4148 -
y1_output_loss: 8.6589 - y2_output_loss: 14.6518 -
y1_output_root_mean_squared_error: 2.9430 - y2_output_root_mean_squared_error:
3.8410 - val_loss: 24.7371 - val_y1_output_loss: 9.3597 - val_y2_output_loss:
14.7022 - val_y1_output_root_mean_squared_error: 3.1045 -
val_y2_output_root_mean_squared_error: 3.8857
Epoch 12/500
614/614 [=====] - 0s 128us/sample - loss: 19.6410 -
y1_output_loss: 7.5577 - y2_output_loss: 12.7531 -
y1_output_root_mean_squared_error: 2.7103 - y2_output_root_mean_squared_error:
3.5065 - val_loss: 43.6435 - val_y1_output_loss: 11.8100 - val_y2_output_loss:
30.9374 - val_y1_output_root_mean_squared_error: 3.4814 -
val_y2_output_root_mean_squared_error: 5.6146
Epoch 13/500
614/614 [=====] - 0s 129us/sample - loss: 22.6918 -
y1_output_loss: 8.2000 - y2_output_loss: 14.4220 -
y1_output_root_mean_squared_error: 2.8669 - y2_output_root_mean_squared_error:
3.8043 - val_loss: 31.1075 - val_y1_output_loss: 9.4528 - val_y2_output_loss:
20.6701 - val_y1_output_root_mean_squared_error: 3.1293 -
val_y2_output_root_mean_squared_error: 4.6168
Epoch 14/500
614/614 [=====] - 0s 129us/sample - loss: 19.6247 -
y1_output_loss: 7.8111 - y2_output_loss: 11.9200 -
y1_output_root_mean_squared_error: 2.7999 - y2_output_root_mean_squared_error:
3.4330 - val_loss: 19.9738 - val_y1_output_loss: 9.3135 - val_y2_output_loss:
10.0967 - val_y1_output_root_mean_squared_error: 3.0947 -
val_y2_output_root_mean_squared_error: 3.2244
Epoch 15/500
614/614 [=====] - 0s 128us/sample - loss: 19.0337 -
y1_output_loss: 7.7629 - y2_output_loss: 12.1208 -
y1_output_root_mean_squared_error: 2.7400 - y2_output_root_mean_squared_error:
3.3950 - val_loss: 151.4613 - val_y1_output_loss: 38.5192 - val_y2_output_loss:
109.5643 - val_y1_output_root_mean_squared_error: 6.2981 -
val_y2_output_root_mean_squared_error: 10.5733
Epoch 16/500
614/614 [=====] - 0s 131us/sample - loss: 21.1439 -
y1_output_loss: 7.9063 - y2_output_loss: 13.2256 -
y1_output_root_mean_squared_error: 2.8052 - y2_output_root_mean_squared_error:
3.6435 - val_loss: 32.6526 - val_y1_output_loss: 10.6154 - val_y2_output_loss:

```

21.0803 - val\_y1\_output\_root\_mean\_squared\_error: 3.3112 -  
val\_y2\_output\_root\_mean\_squared\_error: 4.6571  
Epoch 17/500  
614/614 [=====] - 0s 129us/sample - loss: 20.3705 -  
y1\_output\_loss: 7.5999 - y2\_output\_loss: 12.6528 -  
y1\_output\_root\_mean\_squared\_error: 2.7662 - y2\_output\_root\_mean\_squared\_error:  
3.5663 - val\_loss: 18.0522 - val\_y1\_output\_loss: 7.8529 - val\_y2\_output\_loss:  
9.6797 - val\_y1\_output\_root\_mean\_squared\_error: 2.8420 -  
val\_y2\_output\_root\_mean\_squared\_error: 3.1583  
Epoch 18/500  
614/614 [=====] - 0s 130us/sample - loss: 22.0622 -  
y1\_output\_loss: 7.9412 - y2\_output\_loss: 14.1373 -  
y1\_output\_root\_mean\_squared\_error: 2.8023 - y2\_output\_root\_mean\_squared\_error:  
3.7695 - val\_loss: 20.2018 - val\_y1\_output\_loss: 8.1898 - val\_y2\_output\_loss:  
11.6736 - val\_y1\_output\_root\_mean\_squared\_error: 2.8844 -  
val\_y2\_output\_root\_mean\_squared\_error: 3.4470  
Epoch 19/500  
614/614 [=====] - 0s 130us/sample - loss: 15.6018 -  
y1\_output\_loss: 6.4300 - y2\_output\_loss: 9.1203 -  
y1\_output\_root\_mean\_squared\_error: 2.5388 - y2\_output\_root\_mean\_squared\_error:  
3.0259 - val\_loss: 18.8433 - val\_y1\_output\_loss: 9.1205 - val\_y2\_output\_loss:  
9.1756 - val\_y1\_output\_root\_mean\_squared\_error: 3.0576 -  
val\_y2\_output\_root\_mean\_squared\_error: 3.0813  
Epoch 20/500  
614/614 [=====] - 0s 132us/sample - loss: 17.5152 -  
y1\_output\_loss: 6.6120 - y2\_output\_loss: 10.8083 -  
y1\_output\_root\_mean\_squared\_error: 2.5807 - y2\_output\_root\_mean\_squared\_error:  
3.2947 - val\_loss: 17.3769 - val\_y1\_output\_loss: 7.9954 - val\_y2\_output\_loss:  
8.8969 - val\_y1\_output\_root\_mean\_squared\_error: 2.8624 -  
val\_y2\_output\_root\_mean\_squared\_error: 3.0305  
Epoch 21/500  
614/614 [=====] - 0s 133us/sample - loss: 19.2929 -  
y1\_output\_loss: 7.6371 - y2\_output\_loss: 11.6241 -  
y1\_output\_root\_mean\_squared\_error: 2.7718 - y2\_output\_root\_mean\_squared\_error:  
3.4074 - val\_loss: 29.8917 - val\_y1\_output\_loss: 8.5326 - val\_y2\_output\_loss:  
20.7603 - val\_y1\_output\_root\_mean\_squared\_error: 2.9528 -  
val\_y2\_output\_root\_mean\_squared\_error: 4.6014  
Epoch 22/500  
614/614 [=====] - 0s 131us/sample - loss: 16.3281 -  
y1\_output\_loss: 6.4506 - y2\_output\_loss: 9.9892 -  
y1\_output\_root\_mean\_squared\_error: 2.5144 - y2\_output\_root\_mean\_squared\_error:  
3.1632 - val\_loss: 36.3067 - val\_y1\_output\_loss: 13.5403 - val\_y2\_output\_loss:  
22.1694 - val\_y1\_output\_root\_mean\_squared\_error: 3.7061 -  
val\_y2\_output\_root\_mean\_squared\_error: 4.7510  
Epoch 23/500  
614/614 [=====] - 0s 131us/sample - loss: 16.1768 -  
y1\_output\_loss: 6.4106 - y2\_output\_loss: 9.8103 -  
y1\_output\_root\_mean\_squared\_error: 2.5288 - y2\_output\_root\_mean\_squared\_error:

3.1276 - val\_loss: 22.4106 - val\_y1\_output\_loss: 9.2336 - val\_y2\_output\_loss:  
 12.5242 - val\_y1\_output\_root\_mean\_squared\_error: 3.0880 -  
 val\_y2\_output\_root\_mean\_squared\_error: 3.5881  
 Epoch 24/500  
 614/614 [=====] - 0s 131us/sample - loss: 16.2071 -  
 y1\_output\_loss: 6.1637 - y2\_output\_loss: 9.9755 -  
 y1\_output\_root\_mean\_squared\_error: 2.4908 - y2\_output\_root\_mean\_squared\_error:  
 3.1628 - val\_loss: 17.2895 - val\_y1\_output\_loss: 7.8021 - val\_y2\_output\_loss:  
 8.9300 - val\_y1\_output\_root\_mean\_squared\_error: 2.8380 -  
 val\_y2\_output\_root\_mean\_squared\_error: 3.0390  
 Epoch 25/500  
 614/614 [=====] - 0s 130us/sample - loss: 17.3573 -  
 y1\_output\_loss: 6.3250 - y2\_output\_loss: 10.8830 -  
 y1\_output\_root\_mean\_squared\_error: 2.5262 - y2\_output\_root\_mean\_squared\_error:  
 3.3130 - val\_loss: 18.2902 - val\_y1\_output\_loss: 8.6658 - val\_y2\_output\_loss:  
 9.1816 - val\_y1\_output\_root\_mean\_squared\_error: 2.9778 -  
 val\_y2\_output\_root\_mean\_squared\_error: 3.0697  
 Epoch 26/500  
 614/614 [=====] - 0s 129us/sample - loss: 14.8514 -  
 y1\_output\_loss: 6.0410 - y2\_output\_loss: 8.9851 -  
 y1\_output\_root\_mean\_squared\_error: 2.4475 - y2\_output\_root\_mean\_squared\_error:  
 2.9767 - val\_loss: 16.9422 - val\_y1\_output\_loss: 7.0827 - val\_y2\_output\_loss:  
 9.3010 - val\_y1\_output\_root\_mean\_squared\_error: 2.7086 -  
 val\_y2\_output\_root\_mean\_squared\_error: 3.0993  
 Epoch 27/500  
 614/614 [=====] - 0s 127us/sample - loss: 18.3296 -  
 y1\_output\_loss: 6.6569 - y2\_output\_loss: 12.0774 -  
 y1\_output\_root\_mean\_squared\_error: 2.5431 - y2\_output\_root\_mean\_squared\_error:  
 3.4442 - val\_loss: 144.9002 - val\_y1\_output\_loss: 47.5926 - val\_y2\_output\_loss:  
 93.3536 - val\_y1\_output\_root\_mean\_squared\_error: 6.9956 -  
 val\_y2\_output\_root\_mean\_squared\_error: 9.7960  
 Epoch 28/500  
 614/614 [=====] - 0s 128us/sample - loss: 16.1658 -  
 y1\_output\_loss: 6.2560 - y2\_output\_loss: 9.7899 -  
 y1\_output\_root\_mean\_squared\_error: 2.5106 - y2\_output\_root\_mean\_squared\_error:  
 3.1405 - val\_loss: 15.8266 - val\_y1\_output\_loss: 5.8596 - val\_y2\_output\_loss:  
 9.4656 - val\_y1\_output\_root\_mean\_squared\_error: 2.4618 -  
 val\_y2\_output\_root\_mean\_squared\_error: 3.1251  
 Epoch 29/500  
 614/614 [=====] - 0s 134us/sample - loss: 18.0639 -  
 y1\_output\_loss: 6.5328 - y2\_output\_loss: 11.4369 -  
 y1\_output\_root\_mean\_squared\_error: 2.5592 - y2\_output\_root\_mean\_squared\_error:  
 3.3933 - val\_loss: 19.2946 - val\_y1\_output\_loss: 7.7784 - val\_y2\_output\_loss:  
 11.0732 - val\_y1\_output\_root\_mean\_squared\_error: 2.8157 -  
 val\_y2\_output\_root\_mean\_squared\_error: 3.3714  
 Epoch 30/500  
 614/614 [=====] - 0s 135us/sample - loss: 15.0121 -  
 y1\_output\_loss: 5.4064 - y2\_output\_loss: 9.8325 -



y1\_output\_root\_mean\_squared\_error: 2.3232 - y2\_output\_root\_mean\_squared\_error:  
3.1008 - val\_loss: 72.5812 - val\_y1\_output\_loss: 17.9797 - val\_y2\_output\_loss:  
52.8396 - val\_y1\_output\_root\_mean\_squared\_error: 4.2965 -  
val\_y2\_output\_root\_mean\_squared\_error: 7.3567  
Epoch 31/500  
614/614 [=====] - 0s 135us/sample - loss: 12.3513 -  
y1\_output\_loss: 4.5716 - y2\_output\_loss: 7.7508 -  
y1\_output\_root\_mean\_squared\_error: 2.1333 - y2\_output\_root\_mean\_squared\_error:  
2.7929 - val\_loss: 16.3006 - val\_y1\_output\_loss: 5.5530 - val\_y2\_output\_loss:  
10.2724 - val\_y1\_output\_root\_mean\_squared\_error: 2.3972 -  
val\_y2\_output\_root\_mean\_squared\_error: 3.2487  
Epoch 32/500  
614/614 [=====] - 0s 129us/sample - loss: 12.9289 -  
y1\_output\_loss: 4.8285 - y2\_output\_loss: 8.0474 -  
y1\_output\_root\_mean\_squared\_error: 2.1947 - y2\_output\_root\_mean\_squared\_error:  
2.8482 - val\_loss: 14.7174 - val\_y1\_output\_loss: 7.0008 - val\_y2\_output\_loss:  
7.3033 - val\_y1\_output\_root\_mean\_squared\_error: 2.6782 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.7467  
Epoch 33/500  
614/614 [=====] - 0s 129us/sample - loss: 12.9067 -  
y1\_output\_loss: 4.7052 - y2\_output\_loss: 8.3002 -  
y1\_output\_root\_mean\_squared\_error: 2.1695 - y2\_output\_root\_mean\_squared\_error:  
2.8635 - val\_loss: 21.5058 - val\_y1\_output\_loss: 4.8655 - val\_y2\_output\_loss:  
16.1471 - val\_y1\_output\_root\_mean\_squared\_error: 2.2356 -  
val\_y2\_output\_root\_mean\_squared\_error: 4.0630  
Epoch 34/500  
614/614 [=====] - 0s 129us/sample - loss: 12.5700 -  
y1\_output\_loss: 4.3258 - y2\_output\_loss: 8.1581 -  
y1\_output\_root\_mean\_squared\_error: 2.0874 - y2\_output\_root\_mean\_squared\_error:  
2.8658 - val\_loss: 12.6130 - val\_y1\_output\_loss: 5.1612 - val\_y2\_output\_loss:  
7.0915 - val\_y1\_output\_root\_mean\_squared\_error: 2.3102 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.6974  
Epoch 35/500  
614/614 [=====] - 0s 128us/sample - loss: 10.5373 -  
y1\_output\_loss: 3.9083 - y2\_output\_loss: 6.5498 -  
y1\_output\_root\_mean\_squared\_error: 1.9825 - y2\_output\_root\_mean\_squared\_error:  
2.5704 - val\_loss: 13.1909 - val\_y1\_output\_loss: 5.5519 - val\_y2\_output\_loss:  
7.2184 - val\_y1\_output\_root\_mean\_squared\_error: 2.3884 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.7361  
Epoch 36/500  
614/614 [=====] - 0s 129us/sample - loss: 12.7927 -  
y1\_output\_loss: 4.3786 - y2\_output\_loss: 8.4077 -  
y1\_output\_root\_mean\_squared\_error: 2.0959 - y2\_output\_root\_mean\_squared\_error:  
2.8983 - val\_loss: 12.2398 - val\_y1\_output\_loss: 4.9005 - val\_y2\_output\_loss:  
6.9981 - val\_y1\_output\_root\_mean\_squared\_error: 2.2358 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.6909  
Epoch 37/500  
614/614 [=====] - 0s 130us/sample - loss: 10.7521 -

y1\_output\_loss: 3.8505 - y2\_output\_loss: 6.8614 -  
y1\_output\_root\_mean\_squared\_error: 1.9573 - y2\_output\_root\_mean\_squared\_error:  
2.6308 - val\_loss: 12.0787 - val\_y1\_output\_loss: 5.4116 - val\_y2\_output\_loss:  
6.3070 - val\_y1\_output\_root\_mean\_squared\_error: 2.3538 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.5570  
Epoch 38/500  
614/614 [=====] - 0s 128us/sample - loss: 10.8932 -  
y1\_output\_loss: 3.7986 - y2\_output\_loss: 7.0466 -  
y1\_output\_root\_mean\_squared\_error: 1.9541 - y2\_output\_root\_mean\_squared\_error:  
2.6598 - val\_loss: 13.2771 - val\_y1\_output\_loss: 3.9327 - val\_y2\_output\_loss:  
9.0055 - val\_y1\_output\_root\_mean\_squared\_error: 2.0087 -  
val\_y2\_output\_root\_mean\_squared\_error: 3.0401  
Epoch 39/500  
614/614 [=====] - 0s 130us/sample - loss: 11.5894 -  
y1\_output\_loss: 4.1287 - y2\_output\_loss: 7.4644 -  
y1\_output\_root\_mean\_squared\_error: 2.0248 - y2\_output\_root\_mean\_squared\_error:  
2.7367 - val\_loss: 8.9956 - val\_y1\_output\_loss: 3.4516 - val\_y2\_output\_loss:  
5.2362 - val\_y1\_output\_root\_mean\_squared\_error: 1.8889 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.3297  
Epoch 40/500  
614/614 [=====] - 0s 135us/sample - loss: 10.6920 -  
y1\_output\_loss: 3.7851 - y2\_output\_loss: 6.9317 -  
y1\_output\_root\_mean\_squared\_error: 1.9309 - y2\_output\_root\_mean\_squared\_error:  
2.6389 - val\_loss: 9.6950 - val\_y1\_output\_loss: 3.6171 - val\_y2\_output\_loss:  
5.7635 - val\_y1\_output\_root\_mean\_squared\_error: 1.9345 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.4398  
Epoch 41/500  
614/614 [=====] - 0s 133us/sample - loss: 12.1491 -  
y1\_output\_loss: 3.9496 - y2\_output\_loss: 8.1076 -  
y1\_output\_root\_mean\_squared\_error: 1.9934 - y2\_output\_root\_mean\_squared\_error:  
2.8593 - val\_loss: 8.7167 - val\_y1\_output\_loss: 3.2298 - val\_y2\_output\_loss:  
5.2103 - val\_y1\_output\_root\_mean\_squared\_error: 1.8210 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.3239  
Epoch 42/500  
614/614 [=====] - 0s 128us/sample - loss: 12.3277 -  
y1\_output\_loss: 3.9110 - y2\_output\_loss: 8.5373 -  
y1\_output\_root\_mean\_squared\_error: 1.9646 - y2\_output\_root\_mean\_squared\_error:  
2.9100 - val\_loss: 17.1606 - val\_y1\_output\_loss: 5.1123 - val\_y2\_output\_loss:  
11.6834 - val\_y1\_output\_root\_mean\_squared\_error: 2.2844 -  
val\_y2\_output\_root\_mean\_squared\_error: 3.4557  
Epoch 43/500  
614/614 [=====] - 0s 132us/sample - loss: 10.7275 -  
y1\_output\_loss: 3.5236 - y2\_output\_loss: 7.1477 -  
y1\_output\_root\_mean\_squared\_error: 1.8777 - y2\_output\_root\_mean\_squared\_error:  
2.6836 - val\_loss: 8.5707 - val\_y1\_output\_loss: 3.1088 - val\_y2\_output\_loss:  
5.2005 - val\_y1\_output\_root\_mean\_squared\_error: 1.7948 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.3129  
Epoch 44/500

614/614 [=====] - 0s 128us/sample - loss: 8.0247 -  
y1\_output\_loss: 2.6176 - y2\_output\_loss: 5.4861 -  
y1\_output\_root\_mean\_squared\_error: 1.6245 - y2\_output\_root\_mean\_squared\_error:  
2.3207 - val\_loss: 12.7537 - val\_y1\_output\_loss: 3.1452 - val\_y2\_output\_loss:  
9.3662 - val\_y1\_output\_root\_mean\_squared\_error: 1.8047 -  
val\_y2\_output\_root\_mean\_squared\_error: 3.0816  
Epoch 45/500  
614/614 [=====] - 0s 128us/sample - loss: 9.1718 -  
y1\_output\_loss: 3.0639 - y2\_output\_loss: 6.0755 -  
y1\_output\_root\_mean\_squared\_error: 1.7492 - y2\_output\_root\_mean\_squared\_error:  
2.4723 - val\_loss: 8.9370 - val\_y1\_output\_loss: 3.2423 - val\_y2\_output\_loss:  
5.4515 - val\_y1\_output\_root\_mean\_squared\_error: 1.8287 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.3649  
Epoch 46/500  
614/614 [=====] - 0s 128us/sample - loss: 8.2562 -  
y1\_output\_loss: 2.7435 - y2\_output\_loss: 5.6057 -  
y1\_output\_root\_mean\_squared\_error: 1.6323 - y2\_output\_root\_mean\_squared\_error:  
2.3647 - val\_loss: 20.0702 - val\_y1\_output\_loss: 6.2869 - val\_y2\_output\_loss:  
13.6171 - val\_y1\_output\_root\_mean\_squared\_error: 2.5095 -  
val\_y2\_output\_root\_mean\_squared\_error: 3.7112  
Epoch 47/500  
614/614 [=====] - 0s 132us/sample - loss: 8.2835 -  
y1\_output\_loss: 2.5022 - y2\_output\_loss: 6.1921 -  
y1\_output\_root\_mean\_squared\_error: 1.5751 - y2\_output\_root\_mean\_squared\_error:  
2.4089 - val\_loss: 44.1446 - val\_y1\_output\_loss: 7.6877 - val\_y2\_output\_loss:  
35.5850 - val\_y1\_output\_root\_mean\_squared\_error: 2.8011 -  
val\_y2\_output\_root\_mean\_squared\_error: 6.0248  
Epoch 48/500  
614/614 [=====] - 0s 129us/sample - loss: 8.5368 -  
y1\_output\_loss: 2.7444 - y2\_output\_loss: 5.8264 -  
y1\_output\_root\_mean\_squared\_error: 1.6434 - y2\_output\_root\_mean\_squared\_error:  
2.4158 - val\_loss: 20.8333 - val\_y1\_output\_loss: 6.7342 - val\_y2\_output\_loss:  
13.5787 - val\_y1\_output\_root\_mean\_squared\_error: 2.6377 -  
val\_y2\_output\_root\_mean\_squared\_error: 3.7250  
Epoch 49/500  
614/614 [=====] - 0s 131us/sample - loss: 6.9674 -  
y1\_output\_loss: 2.2731 - y2\_output\_loss: 4.7817 -  
y1\_output\_root\_mean\_squared\_error: 1.4974 - y2\_output\_root\_mean\_squared\_error:  
2.1738 - val\_loss: 7.1292 - val\_y1\_output\_loss: 2.4595 - val\_y2\_output\_loss:  
4.4319 - val\_y1\_output\_root\_mean\_squared\_error: 1.5952 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.1411  
Epoch 50/500  
614/614 [=====] - 0s 138us/sample - loss: 6.3356 -  
y1\_output\_loss: 2.2452 - y2\_output\_loss: 4.1154 -  
y1\_output\_root\_mean\_squared\_error: 1.4905 - y2\_output\_root\_mean\_squared\_error:  
2.0283 - val\_loss: 8.6458 - val\_y1\_output\_loss: 3.3420 - val\_y2\_output\_loss:  
5.0722 - val\_y1\_output\_root\_mean\_squared\_error: 1.8546 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.2817

Epoch 51/500

614/614 [=====] - 0s 136us/sample - loss: 8.4042 -  
y1\_output\_loss: 2.4905 - y2\_output\_loss: 5.9931 -  
y1\_output\_root\_mean\_squared\_error: 1.5683 - y2\_output\_root\_mean\_squared\_error:  
2.4382 - val\_loss: 12.3739 - val\_y1\_output\_loss: 5.1294 - val\_y2\_output\_loss:  
6.8492 - val\_y1\_output\_root\_mean\_squared\_error: 2.2979 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.6634

Epoch 52/500

614/614 [=====] - 0s 130us/sample - loss: 7.3550 -  
y1\_output\_loss: 2.5498 - y2\_output\_loss: 4.7452 -  
y1\_output\_root\_mean\_squared\_error: 1.6029 - y2\_output\_root\_mean\_squared\_error:  
2.1876 - val\_loss: 6.9352 - val\_y1\_output\_loss: 2.2462 - val\_y2\_output\_loss:  
4.4793 - val\_y1\_output\_root\_mean\_squared\_error: 1.5144 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.1545

Epoch 53/500

614/614 [=====] - 0s 138us/sample - loss: 7.6845 -  
y1\_output\_loss: 2.1739 - y2\_output\_loss: 5.5264 -  
y1\_output\_root\_mean\_squared\_error: 1.4760 - y2\_output\_root\_mean\_squared\_error:  
2.3465 - val\_loss: 12.3165 - val\_y1\_output\_loss: 3.3857 - val\_y2\_output\_loss:  
8.6359 - val\_y1\_output\_root\_mean\_squared\_error: 1.8587 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.9769

Epoch 54/500

614/614 [=====] - 0s 137us/sample - loss: 6.8395 -  
y1\_output\_loss: 2.0467 - y2\_output\_loss: 4.7337 -  
y1\_output\_root\_mean\_squared\_error: 1.4368 - y2\_output\_root\_mean\_squared\_error:  
2.1852 - val\_loss: 10.1336 - val\_y1\_output\_loss: 2.8420 - val\_y2\_output\_loss:  
6.9844 - val\_y1\_output\_root\_mean\_squared\_error: 1.7170 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.6806

Epoch 55/500

614/614 [=====] - 0s 133us/sample - loss: 6.9429 -  
y1\_output\_loss: 2.3116 - y2\_output\_loss: 4.6125 -  
y1\_output\_root\_mean\_squared\_error: 1.5241 - y2\_output\_root\_mean\_squared\_error:  
2.1494 - val\_loss: 8.3751 - val\_y1\_output\_loss: 2.8903 - val\_y2\_output\_loss:  
5.3603 - val\_y1\_output\_root\_mean\_squared\_error: 1.6976 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.3438

Epoch 56/500

614/614 [=====] - 0s 135us/sample - loss: 7.1377 -  
y1\_output\_loss: 2.0582 - y2\_output\_loss: 5.0578 -  
y1\_output\_root\_mean\_squared\_error: 1.4342 - y2\_output\_root\_mean\_squared\_error:  
2.2540 - val\_loss: 11.2218 - val\_y1\_output\_loss: 3.5050 - val\_y2\_output\_loss:  
7.6704 - val\_y1\_output\_root\_mean\_squared\_error: 1.8599 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.7862

Epoch 57/500

614/614 [=====] - 0s 142us/sample - loss: 6.9278 -  
y1\_output\_loss: 2.2880 - y2\_output\_loss: 4.5881 -  
y1\_output\_root\_mean\_squared\_error: 1.5186 - y2\_output\_root\_mean\_squared\_error:  
2.1498 - val\_loss: 12.2220 - val\_y1\_output\_loss: 3.1948 - val\_y2\_output\_loss:  
8.9073 - val\_y1\_output\_root\_mean\_squared\_error: 1.8045 -

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val_y2_output_root_mean_squared_error: 2.9943
Epoch 58/500
614/614 [=====] - 0s 136us/sample - loss: 7.2251 -
y1_output_loss: 2.1031 - y2_output_loss: 5.0544 -
y1_output_root_mean_squared_error: 1.4569 - y2_output_root_mean_squared_error:
2.2589 - val_loss: 5.9361 - val_y1_output_loss: 1.8033 - val_y2_output_loss:
3.9507 - val_y1_output_root_mean_squared_error: 1.3602 -
val_y2_output_root_mean_squared_error: 2.0214
Epoch 59/500
614/614 [=====] - 0s 137us/sample - loss: 7.3140 -
y1_output_loss: 2.1869 - y2_output_loss: 5.0994 -
y1_output_root_mean_squared_error: 1.4834 - y2_output_root_mean_squared_error:
2.2613 - val_loss: 12.3100 - val_y1_output_loss: 3.4945 - val_y2_output_loss:
8.7216 - val_y1_output_root_mean_squared_error: 1.8613 -
val_y2_output_root_mean_squared_error: 2.9742
Epoch 60/500
614/614 [=====] - 0s 133us/sample - loss: 5.2879 -
y1_output_loss: 1.7049 - y2_output_loss: 3.5649 -
y1_output_root_mean_squared_error: 1.3014 - y2_output_root_mean_squared_error:
1.8959 - val_loss: 6.8997 - val_y1_output_loss: 2.3054 - val_y2_output_loss:
4.3895 - val_y1_output_root_mean_squared_error: 1.5341 -
val_y2_output_root_mean_squared_error: 2.1322
Epoch 61/500
614/614 [=====] - 0s 135us/sample - loss: 6.6162 -
y1_output_loss: 1.8894 - y2_output_loss: 4.7652 -
y1_output_root_mean_squared_error: 1.3748 - y2_output_root_mean_squared_error:
2.1739 - val_loss: 7.1202 - val_y1_output_loss: 2.3398 - val_y2_output_loss:
4.6837 - val_y1_output_root_mean_squared_error: 1.5180 -
val_y2_output_root_mean_squared_error: 2.1945
Epoch 62/500
614/614 [=====] - 0s 131us/sample - loss: 6.3145 -
y1_output_loss: 1.9589 - y2_output_loss: 4.3978 -
y1_output_root_mean_squared_error: 1.3942 - y2_output_root_mean_squared_error:
2.0906 - val_loss: 11.5506 - val_y1_output_loss: 4.5302 - val_y2_output_loss:
7.3256 - val_y1_output_root_mean_squared_error: 2.1076 -
val_y2_output_root_mean_squared_error: 2.6662
Epoch 63/500
614/614 [=====] - 0s 130us/sample - loss: 5.5166 -
y1_output_loss: 1.7744 - y2_output_loss: 3.7345 -
y1_output_root_mean_squared_error: 1.3338 - y2_output_root_mean_squared_error:
1.9333 - val_loss: 14.2537 - val_y1_output_loss: 3.8529 - val_y2_output_loss:
10.1146 - val_y1_output_root_mean_squared_error: 1.9733 -
val_y2_output_root_mean_squared_error: 3.2186
Epoch 64/500
614/614 [=====] - 0s 135us/sample - loss: 6.2609 -
y1_output_loss: 1.9618 - y2_output_loss: 4.3153 -
y1_output_root_mean_squared_error: 1.3997 - y2_output_root_mean_squared_error:
2.0740 - val_loss: 8.4167 - val_y1_output_loss: 2.9764 - val_y2_output_loss:

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5.1467 - val\_y1\_output\_root\_mean\_squared\_error: 1.7539 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.3110  
 Epoch 65/500  
 614/614 [=====] - 0s 130us/sample - loss: 6.1810 -  
 y1\_output\_loss: 1.8331 - y2\_output\_loss: 4.3664 -  
 y1\_output\_root\_mean\_squared\_error: 1.3495 - y2\_output\_root\_mean\_squared\_error:  
 2.0880 - val\_loss: 16.5537 - val\_y1\_output\_loss: 3.5693 - val\_y2\_output\_loss:  
 12.6560 - val\_y1\_output\_root\_mean\_squared\_error: 1.9210 -  
 val\_y2\_output\_root\_mean\_squared\_error: 3.5866  
 Epoch 66/500  
 614/614 [=====] - 0s 130us/sample - loss: 5.5584 -  
 y1\_output\_loss: 1.7262 - y2\_output\_loss: 3.8138 -  
 y1\_output\_root\_mean\_squared\_error: 1.3104 - y2\_output\_root\_mean\_squared\_error:  
 1.9599 - val\_loss: 6.1280 - val\_y1\_output\_loss: 1.5442 - val\_y2\_output\_loss:  
 4.4018 - val\_y1\_output\_root\_mean\_squared\_error: 1.2649 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.1279  
 Epoch 67/500  
 614/614 [=====] - 0s 129us/sample - loss: 5.6442 -  
 y1\_output\_loss: 1.7421 - y2\_output\_loss: 3.8798 -  
 y1\_output\_root\_mean\_squared\_error: 1.3160 - y2\_output\_root\_mean\_squared\_error:  
 1.9780 - val\_loss: 8.1424 - val\_y1\_output\_loss: 2.3467 - val\_y2\_output\_loss:  
 5.5269 - val\_y1\_output\_root\_mean\_squared\_error: 1.5545 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.3929  
 Epoch 68/500  
 614/614 [=====] - 0s 135us/sample - loss: 5.3195 -  
 y1\_output\_loss: 1.5539 - y2\_output\_loss: 3.8100 -  
 y1\_output\_root\_mean\_squared\_error: 1.2429 - y2\_output\_root\_mean\_squared\_error:  
 1.9429 - val\_loss: 7.9528 - val\_y1\_output\_loss: 2.5931 - val\_y2\_output\_loss:  
 5.1312 - val\_y1\_output\_root\_mean\_squared\_error: 1.6220 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.3070  
 Epoch 69/500  
 614/614 [=====] - 0s 131us/sample - loss: 6.0808 -  
 y1\_output\_loss: 1.8520 - y2\_output\_loss: 4.2545 -  
 y1\_output\_root\_mean\_squared\_error: 1.3619 - y2\_output\_root\_mean\_squared\_error:  
 2.0557 - val\_loss: 7.7801 - val\_y1\_output\_loss: 2.4646 - val\_y2\_output\_loss:  
 5.1087 - val\_y1\_output\_root\_mean\_squared\_error: 1.5829 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.2966  
 Epoch 70/500  
 614/614 [=====] - 0s 130us/sample - loss: 7.3552 -  
 y1\_output\_loss: 2.0344 - y2\_output\_loss: 5.3213 -  
 y1\_output\_root\_mean\_squared\_error: 1.4318 - y2\_output\_root\_mean\_squared\_error:  
 2.3033 - val\_loss: 21.3278 - val\_y1\_output\_loss: 3.9564 - val\_y2\_output\_loss:  
 17.0161 - val\_y1\_output\_root\_mean\_squared\_error: 1.9948 -  
 val\_y2\_output\_root\_mean\_squared\_error: 4.1651  
 Epoch 71/500  
 614/614 [=====] - 0s 130us/sample - loss: 7.0115 -  
 y1\_output\_loss: 1.8865 - y2\_output\_loss: 5.0745 -  
 y1\_output\_root\_mean\_squared\_error: 1.3792 - y2\_output\_root\_mean\_squared\_error:

2.2604 - val\_loss: 6.9985 - val\_y1\_output\_loss: 1.9071 - val\_y2\_output\_loss:  
 4.8668 - val\_y1\_output\_root\_mean\_squared\_error: 1.4026 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.2430  
 Epoch 72/500  
 614/614 [=====] - 0s 131us/sample - loss: 6.0584 -  
 y1\_output\_loss: 1.7810 - y2\_output\_loss: 4.4553 -  
 y1\_output\_root\_mean\_squared\_error: 1.3020 - y2\_output\_root\_mean\_squared\_error:  
 2.0888 - val\_loss: 28.5440 - val\_y1\_output\_loss: 11.0015 - val\_y2\_output\_loss:  
 16.5097 - val\_y1\_output\_root\_mean\_squared\_error: 3.3806 -  
 val\_y2\_output\_root\_mean\_squared\_error: 4.1371  
 Epoch 73/500  
 614/614 [=====] - 0s 136us/sample - loss: 5.1581 -  
 y1\_output\_loss: 1.4923 - y2\_output\_loss: 3.6717 -  
 y1\_output\_root\_mean\_squared\_error: 1.2204 - y2\_output\_root\_mean\_squared\_error:  
 1.9154 - val\_loss: 10.3464 - val\_y1\_output\_loss: 2.9701 - val\_y2\_output\_loss:  
 7.3457 - val\_y1\_output\_root\_mean\_squared\_error: 1.7031 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.7287  
 Epoch 74/500  
 614/614 [=====] - 0s 131us/sample - loss: 5.1542 -  
 y1\_output\_loss: 1.4016 - y2\_output\_loss: 3.7842 -  
 y1\_output\_root\_mean\_squared\_error: 1.1645 - y2\_output\_root\_mean\_squared\_error:  
 1.9489 - val\_loss: 6.1737 - val\_y1\_output\_loss: 1.3385 - val\_y2\_output\_loss:  
 4.6998 - val\_y1\_output\_root\_mean\_squared\_error: 1.1657 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.1943  
 Epoch 75/500  
 614/614 [=====] - 0s 131us/sample - loss: 4.5030 -  
 y1\_output\_loss: 1.2186 - y2\_output\_loss: 3.2502 -  
 y1\_output\_root\_mean\_squared\_error: 1.1077 - y2\_output\_root\_mean\_squared\_error:  
 1.8099 - val\_loss: 5.1932 - val\_y1\_output\_loss: 1.3033 - val\_y2\_output\_loss:  
 3.7947 - val\_y1\_output\_root\_mean\_squared\_error: 1.1334 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.9770  
 Epoch 76/500  
 614/614 [=====] - 0s 131us/sample - loss: 4.2037 -  
 y1\_output\_loss: 1.1105 - y2\_output\_loss: 3.0555 -  
 y1\_output\_root\_mean\_squared\_error: 1.0587 - y2\_output\_root\_mean\_squared\_error:  
 1.7558 - val\_loss: 4.3940 - val\_y1\_output\_loss: 0.9389 - val\_y2\_output\_loss:  
 3.3467 - val\_y1\_output\_root\_mean\_squared\_error: 0.9834 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.8512  
 Epoch 77/500  
 614/614 [=====] - 0s 134us/sample - loss: 4.7373 -  
 y1\_output\_loss: 1.1185 - y2\_output\_loss: 3.5830 -  
 y1\_output\_root\_mean\_squared\_error: 1.0606 - y2\_output\_root\_mean\_squared\_error:  
 1.9006 - val\_loss: 5.4690 - val\_y1\_output\_loss: 0.8850 - val\_y2\_output\_loss:  
 4.4419 - val\_y1\_output\_root\_mean\_squared\_error: 0.9553 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.1346  
 Epoch 78/500  
 614/614 [=====] - 0s 135us/sample - loss: 4.8766 -  
 y1\_output\_loss: 1.2684 - y2\_output\_loss: 3.6693 -

y1\_output\_root\_mean\_squared\_error: 1.1244 - y2\_output\_root\_mean\_squared\_error:  
1.9006 - val\_loss: 14.5256 - val\_y1\_output\_loss: 4.5688 - val\_y2\_output\_loss:  
9.6230 - val\_y1\_output\_root\_mean\_squared\_error: 2.1517 -  
val\_y2\_output\_root\_mean\_squared\_error: 3.1457  
Epoch 79/500  
614/614 [=====] - 0s 136us/sample - loss: 6.2449 -  
y1\_output\_loss: 1.4886 - y2\_output\_loss: 4.7243 -  
y1\_output\_root\_mean\_squared\_error: 1.2251 - y2\_output\_root\_mean\_squared\_error:  
2.1781 - val\_loss: 6.2688 - val\_y1\_output\_loss: 2.3095 - val\_y2\_output\_loss:  
3.7924 - val\_y1\_output\_root\_mean\_squared\_error: 1.5288 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.9828  
Epoch 80/500  
614/614 [=====] - 0s 135us/sample - loss: 4.2073 -  
y1\_output\_loss: 1.1661 - y2\_output\_loss: 3.1264 -  
y1\_output\_root\_mean\_squared\_error: 1.0626 - y2\_output\_root\_mean\_squared\_error:  
1.7545 - val\_loss: 14.6531 - val\_y1\_output\_loss: 4.8212 - val\_y2\_output\_loss:  
9.3776 - val\_y1\_output\_root\_mean\_squared\_error: 2.2299 -  
val\_y2\_output\_root\_mean\_squared\_error: 3.1114  
Epoch 81/500  
614/614 [=====] - 0s 136us/sample - loss: 7.3228 -  
y1\_output\_loss: 1.8488 - y2\_output\_loss: 5.7475 -  
y1\_output\_root\_mean\_squared\_error: 1.3419 - y2\_output\_root\_mean\_squared\_error:  
2.3499 - val\_loss: 26.1265 - val\_y1\_output\_loss: 5.5850 - val\_y2\_output\_loss:  
19.7853 - val\_y1\_output\_root\_mean\_squared\_error: 2.3953 -  
val\_y2\_output\_root\_mean\_squared\_error: 4.5154  
Epoch 82/500  
614/614 [=====] - 0s 136us/sample - loss: 9.5636 -  
y1\_output\_loss: 2.6795 - y2\_output\_loss: 6.8678 -  
y1\_output\_root\_mean\_squared\_error: 1.6440 - y2\_output\_root\_mean\_squared\_error:  
2.6194 - val\_loss: 8.4645 - val\_y1\_output\_loss: 1.8198 - val\_y2\_output\_loss:  
6.7465 - val\_y1\_output\_root\_mean\_squared\_error: 1.3066 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.5995  
Epoch 83/500  
614/614 [=====] - 0s 135us/sample - loss: 3.8868 -  
y1\_output\_loss: 0.9806 - y2\_output\_loss: 2.9131 -  
y1\_output\_root\_mean\_squared\_error: 0.9777 - y2\_output\_root\_mean\_squared\_error:  
1.7120 - val\_loss: 7.7100 - val\_y1\_output\_loss: 2.6552 - val\_y2\_output\_loss:  
4.9955 - val\_y1\_output\_root\_mean\_squared\_error: 1.6148 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.2589  
Epoch 84/500  
614/614 [=====] - 0s 130us/sample - loss: 4.2762 -  
y1\_output\_loss: 1.0184 - y2\_output\_loss: 3.2333 -  
y1\_output\_root\_mean\_squared\_error: 1.0105 - y2\_output\_root\_mean\_squared\_error:  
1.8042 - val\_loss: 3.9934 - val\_y1\_output\_loss: 0.9157 - val\_y2\_output\_loss:  
2.9779 - val\_y1\_output\_root\_mean\_squared\_error: 0.9507 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.7577  
Epoch 85/500  
614/614 [=====] - 0s 134us/sample - loss: 3.7044 -



y1\_output\_loss: 0.8383 - y2\_output\_loss: 2.8668 -  
y1\_output\_root\_mean\_squared\_error: 0.9149 - y2\_output\_root\_mean\_squared\_error:  
1.6933 - val\_loss: 7.7516 - val\_y1\_output\_loss: 2.7600 - val\_y2\_output\_loss:  
4.9258 - val\_y1\_output\_root\_mean\_squared\_error: 1.6513 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.2416  
Epoch 86/500  
614/614 [=====] - 0s 133us/sample - loss: 6.3006 -  
y1\_output\_loss: 1.5393 - y2\_output\_loss: 4.7050 -  
y1\_output\_root\_mean\_squared\_error: 1.2460 - y2\_output\_root\_mean\_squared\_error:  
2.1790 - val\_loss: 8.4111 - val\_y1\_output\_loss: 2.4758 - val\_y2\_output\_loss:  
5.6732 - val\_y1\_output\_root\_mean\_squared\_error: 1.5974 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.4206  
Epoch 87/500  
614/614 [=====] - 0s 135us/sample - loss: 4.8400 -  
y1\_output\_loss: 1.2751 - y2\_output\_loss: 3.6321 -  
y1\_output\_root\_mean\_squared\_error: 1.1232 - y2\_output\_root\_mean\_squared\_error:  
1.8917 - val\_loss: 15.6222 - val\_y1\_output\_loss: 6.1973 - val\_y2\_output\_loss:  
9.5467 - val\_y1\_output\_root\_mean\_squared\_error: 2.4944 -  
val\_y2\_output\_root\_mean\_squared\_error: 3.0659  
Epoch 88/500  
614/614 [=====] - 0s 133us/sample - loss: 3.8122 -  
y1\_output\_loss: 0.8320 - y2\_output\_loss: 3.1090 -  
y1\_output\_root\_mean\_squared\_error: 0.9074 - y2\_output\_root\_mean\_squared\_error:  
1.7288 - val\_loss: 16.5571 - val\_y1\_output\_loss: 2.9466 - val\_y2\_output\_loss:  
13.1447 - val\_y1\_output\_root\_mean\_squared\_error: 1.7407 -  
val\_y2\_output\_root\_mean\_squared\_error: 3.6779  
Epoch 89/500  
614/614 [=====] - 0s 135us/sample - loss: 3.5893 -  
y1\_output\_loss: 0.8741 - y2\_output\_loss: 2.6976 -  
y1\_output\_root\_mean\_squared\_error: 0.9327 - y2\_output\_root\_mean\_squared\_error:  
1.6491 - val\_loss: 3.8398 - val\_y1\_output\_loss: 1.1143 - val\_y2\_output\_loss:  
2.6234 - val\_y1\_output\_root\_mean\_squared\_error: 1.0725 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.6400  
Epoch 90/500  
614/614 [=====] - 0s 133us/sample - loss: 3.2944 -  
y1\_output\_loss: 0.7778 - y2\_output\_loss: 2.5300 -  
y1\_output\_root\_mean\_squared\_error: 0.8849 - y2\_output\_root\_mean\_squared\_error:  
1.5847 - val\_loss: 4.9763 - val\_y1\_output\_loss: 0.8785 - val\_y2\_output\_loss:  
3.9918 - val\_y1\_output\_root\_mean\_squared\_error: 0.9511 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.0178  
Epoch 91/500  
614/614 [=====] - 0s 135us/sample - loss: 3.2822 -  
y1\_output\_loss: 0.7913 - y2\_output\_loss: 2.4897 -  
y1\_output\_root\_mean\_squared\_error: 0.8900 - y2\_output\_root\_mean\_squared\_error:  
1.5780 - val\_loss: 6.0491 - val\_y1\_output\_loss: 1.3992 - val\_y2\_output\_loss:  
4.6437 - val\_y1\_output\_root\_mean\_squared\_error: 1.1534 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.1723  
Epoch 92/500

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614/614 [=====] - 0s 133us/sample - loss: 10.0241 -
y1_output_loss: 2.8123 - y2_output_loss: 7.1646 -
y1_output_root_mean_squared_error: 1.6842 - y2_output_root_mean_squared_error:
2.6809 - val_loss: 7.3748 - val_y1_output_loss: 0.9491 - val_y2_output_loss:
6.2285 - val_y1_output_root_mean_squared_error: 0.9797 -
val_y2_output_root_mean_squared_error: 2.5328
Epoch 93/500
614/614 [=====] - 0s 135us/sample - loss: 3.8840 -
y1_output_loss: 0.8243 - y2_output_loss: 3.1194 -
y1_output_root_mean_squared_error: 0.8985 - y2_output_root_mean_squared_error:
1.7540 - val_loss: 7.1159 - val_y1_output_loss: 2.2299 - val_y2_output_loss:
4.6609 - val_y1_output_root_mean_squared_error: 1.5217 -
val_y2_output_root_mean_squared_error: 2.1910
Epoch 94/500
614/614 [=====] - 0s 133us/sample - loss: 3.9044 -
y1_output_loss: 0.8510 - y2_output_loss: 3.0455 -
y1_output_root_mean_squared_error: 0.9202 - y2_output_root_mean_squared_error:
1.7486 - val_loss: 3.9041 - val_y1_output_loss: 1.1566 - val_y2_output_loss:
2.6422 - val_y1_output_root_mean_squared_error: 1.0817 -
val_y2_output_root_mean_squared_error: 1.6535
Epoch 95/500
614/614 [=====] - 0s 135us/sample - loss: 4.9432 -
y1_output_loss: 1.2533 - y2_output_loss: 3.6782 -
y1_output_root_mean_squared_error: 1.1241 - y2_output_root_mean_squared_error:
1.9182 - val_loss: 3.3915 - val_y1_output_loss: 0.6103 - val_y2_output_loss:
2.6761 - val_y1_output_root_mean_squared_error: 0.7885 -
val_y2_output_root_mean_squared_error: 1.6643
Epoch 96/500
614/614 [=====] - 0s 135us/sample - loss: 3.9769 -
y1_output_loss: 0.8367 - y2_output_loss: 3.1990 -
y1_output_root_mean_squared_error: 0.9120 - y2_output_root_mean_squared_error:
1.7735 - val_loss: 11.4570 - val_y1_output_loss: 2.9250 - val_y2_output_loss:
8.4507 - val_y1_output_root_mean_squared_error: 1.7217 -
val_y2_output_root_mean_squared_error: 2.9143
Epoch 97/500
614/614 [=====] - 0s 136us/sample - loss: 3.2623 -
y1_output_loss: 0.7250 - y2_output_loss: 2.5260 -
y1_output_root_mean_squared_error: 0.8540 - y2_output_root_mean_squared_error:
1.5915 - val_loss: 4.0699 - val_y1_output_loss: 0.9812 - val_y2_output_loss:
3.0478 - val_y1_output_root_mean_squared_error: 0.9550 -
val_y2_output_root_mean_squared_error: 1.7770
Epoch 98/500
614/614 [=====] - 0s 136us/sample - loss: 3.5460 -
y1_output_loss: 0.8090 - y2_output_loss: 2.7274 -
y1_output_root_mean_squared_error: 0.9021 - y2_output_root_mean_squared_error:
1.6529 - val_loss: 4.5756 - val_y1_output_loss: 0.5503 - val_y2_output_loss:
3.9062 - val_y1_output_root_mean_squared_error: 0.7441 -
val_y2_output_root_mean_squared_error: 2.0055

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Epoch 99/500

614/614 [=====] - 0s 135us/sample - loss: 2.8803 -  
y1\_output\_loss: 0.6205 - y2\_output\_loss: 2.2962 -  
y1\_output\_root\_mean\_squared\_error: 0.7799 - y2\_output\_root\_mean\_squared\_error:  
1.5073 - val\_loss: 4.9883 - val\_y1\_output\_loss: 1.4258 - val\_y2\_output\_loss:  
3.4137 - val\_y1\_output\_root\_mean\_squared\_error: 1.2078 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.8787

Epoch 100/500

614/614 [=====] - 0s 132us/sample - loss: 3.6908 -  
y1\_output\_loss: 0.9097 - y2\_output\_loss: 2.7689 -  
y1\_output\_root\_mean\_squared\_error: 0.9550 - y2\_output\_root\_mean\_squared\_error:  
1.6670 - val\_loss: 7.3692 - val\_y1\_output\_loss: 1.3571 - val\_y2\_output\_loss:  
6.0247 - val\_y1\_output\_root\_mean\_squared\_error: 1.1698 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.4496

Epoch 101/500

614/614 [=====] - 0s 130us/sample - loss: 3.8019 -  
y1\_output\_loss: 0.9132 - y2\_output\_loss: 2.8581 -  
y1\_output\_root\_mean\_squared\_error: 0.9578 - y2\_output\_root\_mean\_squared\_error:  
1.6984 - val\_loss: 3.5439 - val\_y1\_output\_loss: 0.8403 - val\_y2\_output\_loss:  
2.6441 - val\_y1\_output\_root\_mean\_squared\_error: 0.9265 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.6388

Epoch 102/500

614/614 [=====] - 0s 131us/sample - loss: 3.5071 -  
y1\_output\_loss: 0.7340 - y2\_output\_loss: 2.7671 -  
y1\_output\_root\_mean\_squared\_error: 0.8589 - y2\_output\_root\_mean\_squared\_error:  
1.6641 - val\_loss: 3.4804 - val\_y1\_output\_loss: 0.5270 - val\_y2\_output\_loss:  
2.8825 - val\_y1\_output\_root\_mean\_squared\_error: 0.7232 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.7197

Epoch 103/500

614/614 [=====] - 0s 128us/sample - loss: 4.6260 -  
y1\_output\_loss: 1.0658 - y2\_output\_loss: 3.5251 -  
y1\_output\_root\_mean\_squared\_error: 1.0349 - y2\_output\_root\_mean\_squared\_error:  
1.8855 - val\_loss: 3.8298 - val\_y1\_output\_loss: 0.9650 - val\_y2\_output\_loss:  
2.7866 - val\_y1\_output\_root\_mean\_squared\_error: 0.9714 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.6989

Epoch 104/500

614/614 [=====] - 0s 134us/sample - loss: 3.2573 -  
y1\_output\_loss: 0.7156 - y2\_output\_loss: 2.5299 -  
y1\_output\_root\_mean\_squared\_error: 0.8468 - y2\_output\_root\_mean\_squared\_error:  
1.5938 - val\_loss: 3.4373 - val\_y1\_output\_loss: 0.6154 - val\_y2\_output\_loss:  
2.7661 - val\_y1\_output\_root\_mean\_squared\_error: 0.7942 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.6753

Epoch 105/500

614/614 [=====] - 0s 132us/sample - loss: 2.8775 -  
y1\_output\_loss: 0.6364 - y2\_output\_loss: 2.2160 -  
y1\_output\_root\_mean\_squared\_error: 0.8010 - y2\_output\_root\_mean\_squared\_error:  
1.4953 - val\_loss: 2.8556 - val\_y1\_output\_loss: 0.5346 - val\_y2\_output\_loss:  
2.2617 - val\_y1\_output\_root\_mean\_squared\_error: 0.7392 -

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val_y2_output_root_mean_squared_error: 1.5196
Epoch 106/500
614/614 [=====] - 0s 134us/sample - loss: 2.4330 -
y1_output_loss: 0.5206 - y2_output_loss: 1.9116 -
y1_output_root_mean_squared_error: 0.7223 - y2_output_root_mean_squared_error:
1.3825 - val_loss: 3.5069 - val_y1_output_loss: 0.5957 - val_y2_output_loss:
2.8494 - val_y1_output_root_mean_squared_error: 0.7609 -
val_y2_output_root_mean_squared_error: 1.7111
Epoch 107/500
614/614 [=====] - 0s 139us/sample - loss: 4.0709 -
y1_output_loss: 0.8570 - y2_output_loss: 3.1772 -
y1_output_root_mean_squared_error: 0.9296 - y2_output_root_mean_squared_error:
1.7907 - val_loss: 2.6712 - val_y1_output_loss: 0.4667 - val_y2_output_loss:
2.1461 - val_y1_output_root_mean_squared_error: 0.6762 -
val_y2_output_root_mean_squared_error: 1.4880
Epoch 108/500
614/614 [=====] - 0s 131us/sample - loss: 5.5168 -
y1_output_loss: 1.6069 - y2_output_loss: 3.9265 -
y1_output_root_mean_squared_error: 1.2667 - y2_output_root_mean_squared_error:
1.9779 - val_loss: 13.1382 - val_y1_output_loss: 2.2863 - val_y2_output_loss:
10.7591 - val_y1_output_root_mean_squared_error: 1.4922 -
val_y2_output_root_mean_squared_error: 3.3033
Epoch 109/500
614/614 [=====] - 0s 129us/sample - loss: 4.2617 -
y1_output_loss: 0.9840 - y2_output_loss: 3.2465 -
y1_output_root_mean_squared_error: 0.9950 - y2_output_root_mean_squared_error:
1.8088 - val_loss: 2.9302 - val_y1_output_loss: 0.4993 - val_y2_output_loss:
2.3856 - val_y1_output_root_mean_squared_error: 0.7112 -
val_y2_output_root_mean_squared_error: 1.5570
Epoch 110/500
614/614 [=====] - 0s 128us/sample - loss: 2.5083 -
y1_output_loss: 0.5088 - y2_output_loss: 1.9868 -
y1_output_root_mean_squared_error: 0.7110 - y2_output_root_mean_squared_error:
1.4152 - val_loss: 3.3776 - val_y1_output_loss: 0.8560 - val_y2_output_loss:
2.4302 - val_y1_output_root_mean_squared_error: 0.9302 -
val_y2_output_root_mean_squared_error: 1.5850
Epoch 111/500
614/614 [=====] - 0s 128us/sample - loss: 6.1708 -
y1_output_loss: 1.6802 - y2_output_loss: 4.4415 -
y1_output_root_mean_squared_error: 1.2999 - y2_output_root_mean_squared_error:
2.1168 - val_loss: 2.8052 - val_y1_output_loss: 0.5010 - val_y2_output_loss:
2.2465 - val_y1_output_root_mean_squared_error: 0.6957 -
val_y2_output_root_mean_squared_error: 1.5236
Epoch 112/500
614/614 [=====] - 0s 134us/sample - loss: 2.4099 -
y1_output_loss: 0.5448 - y2_output_loss: 1.8458 -
y1_output_root_mean_squared_error: 0.7410 - y2_output_root_mean_squared_error:
1.3641 - val_loss: 2.4985 - val_y1_output_loss: 0.4131 - val_y2_output_loss:

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2.0226 - val\_y1\_output\_root\_mean\_squared\_error: 0.6428 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.4441  
 Epoch 113/500  
 614/614 [=====] - 0s 130us/sample - loss: 2.9357 -  
 y1\_output\_loss: 0.6713 - y2\_output\_loss: 2.3255 -  
 y1\_output\_root\_mean\_squared\_error: 0.8216 - y2\_output\_root\_mean\_squared\_error:  
 1.5035 - val\_loss: 8.2905 - val\_y1\_output\_loss: 1.1903 - val\_y2\_output\_loss:  
 6.8817 - val\_y1\_output\_root\_mean\_squared\_error: 1.0946 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.6632  
 Epoch 114/500  
 614/614 [=====] - 0s 137us/sample - loss: 3.0915 -  
 y1\_output\_loss: 0.7614 - y2\_output\_loss: 2.3030 -  
 y1\_output\_root\_mean\_squared\_error: 0.8762 - y2\_output\_root\_mean\_squared\_error:  
 1.5244 - val\_loss: 2.4070 - val\_y1\_output\_loss: 0.4223 - val\_y2\_output\_loss:  
 1.9212 - val\_y1\_output\_root\_mean\_squared\_error: 0.6525 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.4076  
 Epoch 115/500  
 614/614 [=====] - 0s 133us/sample - loss: 3.4017 -  
 y1\_output\_loss: 0.7779 - y2\_output\_loss: 2.6153 -  
 y1\_output\_root\_mean\_squared\_error: 0.8763 - y2\_output\_root\_mean\_squared\_error:  
 1.6229 - val\_loss: 3.2368 - val\_y1\_output\_loss: 0.8679 - val\_y2\_output\_loss:  
 2.2706 - val\_y1\_output\_root\_mean\_squared\_error: 0.9448 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.5311  
 Epoch 116/500  
 614/614 [=====] - 0s 132us/sample - loss: 2.9051 -  
 y1\_output\_loss: 0.6182 - y2\_output\_loss: 2.2835 -  
 y1\_output\_root\_mean\_squared\_error: 0.7857 - y2\_output\_root\_mean\_squared\_error:  
 1.5125 - val\_loss: 6.1705 - val\_y1\_output\_loss: 0.5990 - val\_y2\_output\_loss:  
 5.4828 - val\_y1\_output\_root\_mean\_squared\_error: 0.7598 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.3650  
 Epoch 117/500  
 614/614 [=====] - 0s 134us/sample - loss: 2.8510 -  
 y1\_output\_loss: 0.7063 - y2\_output\_loss: 2.1426 -  
 y1\_output\_root\_mean\_squared\_error: 0.8416 - y2\_output\_root\_mean\_squared\_error:  
 1.4638 - val\_loss: 4.7365 - val\_y1\_output\_loss: 1.4598 - val\_y2\_output\_loss:  
 3.2244 - val\_y1\_output\_root\_mean\_squared\_error: 1.2225 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.8005  
 Epoch 118/500  
 614/614 [=====] - 0s 133us/sample - loss: 2.2978 -  
 y1\_output\_loss: 0.4915 - y2\_output\_loss: 1.8270 -  
 y1\_output\_root\_mean\_squared\_error: 0.7027 - y2\_output\_root\_mean\_squared\_error:  
 1.3431 - val\_loss: 4.0689 - val\_y1\_output\_loss: 0.4180 - val\_y2\_output\_loss:  
 3.5634 - val\_y1\_output\_root\_mean\_squared\_error: 0.6546 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.9080  
 Epoch 119/500  
 614/614 [=====] - 0s 128us/sample - loss: 2.3800 -  
 y1\_output\_loss: 0.4663 - y2\_output\_loss: 1.8934 -  
 y1\_output\_root\_mean\_squared\_error: 0.6850 - y2\_output\_root\_mean\_squared\_error:

1.3823 - val\_loss: 3.5386 - val\_y1\_output\_loss: 0.4530 - val\_y2\_output\_loss:  
 3.0042 - val\_y1\_output\_root\_mean\_squared\_error: 0.6683 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.7584  
 Epoch 120/500  
 614/614 [=====] - 0s 128us/sample - loss: 2.9968 -  
 y1\_output\_loss: 0.6245 - y2\_output\_loss: 2.3729 -  
 y1\_output\_root\_mean\_squared\_error: 0.7915 - y2\_output\_root\_mean\_squared\_error:  
 1.5396 - val\_loss: 4.6854 - val\_y1\_output\_loss: 1.2491 - val\_y2\_output\_loss:  
 3.3605 - val\_y1\_output\_root\_mean\_squared\_error: 1.1101 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.8583  
 Epoch 121/500  
 614/614 [=====] - 0s 127us/sample - loss: 2.0432 -  
 y1\_output\_loss: 0.4344 - y2\_output\_loss: 1.6014 -  
 y1\_output\_root\_mean\_squared\_error: 0.6608 - y2\_output\_root\_mean\_squared\_error:  
 1.2675 - val\_loss: 3.1032 - val\_y1\_output\_loss: 0.4411 - val\_y2\_output\_loss:  
 2.5916 - val\_y1\_output\_root\_mean\_squared\_error: 0.6623 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.6324  
 Epoch 122/500  
 614/614 [=====] - 0s 127us/sample - loss: 3.2912 -  
 y1\_output\_loss: 0.6884 - y2\_output\_loss: 2.6205 -  
 y1\_output\_root\_mean\_squared\_error: 0.8326 - y2\_output\_root\_mean\_squared\_error:  
 1.6118 - val\_loss: 5.9291 - val\_y1\_output\_loss: 0.4905 - val\_y2\_output\_loss:  
 5.3727 - val\_y1\_output\_root\_mean\_squared\_error: 0.7132 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.3282  
 Epoch 123/500  
 614/614 [=====] - 0s 128us/sample - loss: 2.0776 -  
 y1\_output\_loss: 0.4404 - y2\_output\_loss: 1.6222 -  
 y1\_output\_root\_mean\_squared\_error: 0.6659 - y2\_output\_root\_mean\_squared\_error:  
 1.2784 - val\_loss: 2.2639 - val\_y1\_output\_loss: 0.4439 - val\_y2\_output\_loss:  
 1.7645 - val\_y1\_output\_root\_mean\_squared\_error: 0.6659 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.3493  
 Epoch 124/500  
 614/614 [=====] - 0s 127us/sample - loss: 3.1910 -  
 y1\_output\_loss: 0.7700 - y2\_output\_loss: 2.4442 -  
 y1\_output\_root\_mean\_squared\_error: 0.8801 - y2\_output\_root\_mean\_squared\_error:  
 1.5545 - val\_loss: 5.0307 - val\_y1\_output\_loss: 0.7263 - val\_y2\_output\_loss:  
 4.2096 - val\_y1\_output\_root\_mean\_squared\_error: 0.8459 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.0773  
 Epoch 125/500  
 614/614 [=====] - 0s 127us/sample - loss: 3.0768 -  
 y1\_output\_loss: 0.6429 - y2\_output\_loss: 2.4431 -  
 y1\_output\_root\_mean\_squared\_error: 0.7978 - y2\_output\_root\_mean\_squared\_error:  
 1.5621 - val\_loss: 6.4708 - val\_y1\_output\_loss: 1.2483 - val\_y2\_output\_loss:  
 5.0422 - val\_y1\_output\_root\_mean\_squared\_error: 1.1288 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.2796  
 Epoch 126/500  
 614/614 [=====] - 0s 132us/sample - loss: 2.1594 -  
 y1\_output\_loss: 0.4613 - y2\_output\_loss: 1.7269 -

y1\_output\_root\_mean\_squared\_error: 0.6818 - y2\_output\_root\_mean\_squared\_error:  
1.3018 - val\_loss: 17.7947 - val\_y1\_output\_loss: 1.5558 - val\_y2\_output\_loss:  
15.9388 - val\_y1\_output\_root\_mean\_squared\_error: 1.2406 -  
val\_y2\_output\_root\_mean\_squared\_error: 4.0318  
Epoch 127/500  
614/614 [=====] - 0s 129us/sample - loss: 3.6851 -  
y1\_output\_loss: 0.7332 - y2\_output\_loss: 2.9396 -  
y1\_output\_root\_mean\_squared\_error: 0.8534 - y2\_output\_root\_mean\_squared\_error:  
1.7195 - val\_loss: 2.6709 - val\_y1\_output\_loss: 0.5390 - val\_y2\_output\_loss:  
2.1098 - val\_y1\_output\_root\_mean\_squared\_error: 0.7224 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.4659  
Epoch 128/500  
614/614 [=====] - 0s 128us/sample - loss: 3.6329 -  
y1\_output\_loss: 0.7886 - y2\_output\_loss: 2.8466 -  
y1\_output\_root\_mean\_squared\_error: 0.8900 - y2\_output\_root\_mean\_squared\_error:  
1.6854 - val\_loss: 4.7101 - val\_y1\_output\_loss: 0.8489 - val\_y2\_output\_loss:  
3.7143 - val\_y1\_output\_root\_mean\_squared\_error: 0.9376 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.9573  
Epoch 129/500  
614/614 [=====] - 0s 130us/sample - loss: 2.4592 -  
y1\_output\_loss: 0.5589 - y2\_output\_loss: 1.9406 -  
y1\_output\_root\_mean\_squared\_error: 0.7450 - y2\_output\_root\_mean\_squared\_error:  
1.3799 - val\_loss: 7.8606 - val\_y1\_output\_loss: 1.3916 - val\_y2\_output\_loss:  
6.2961 - val\_y1\_output\_root\_mean\_squared\_error: 1.2012 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.5333  
Epoch 130/500  
614/614 [=====] - 0s 135us/sample - loss: 2.4546 -  
y1\_output\_loss: 0.5235 - y2\_output\_loss: 1.9162 -  
y1\_output\_root\_mean\_squared\_error: 0.7233 - y2\_output\_root\_mean\_squared\_error:  
1.3897 - val\_loss: 2.3077 - val\_y1\_output\_loss: 0.4313 - val\_y2\_output\_loss:  
1.8144 - val\_y1\_output\_root\_mean\_squared\_error: 0.6559 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.3702  
Epoch 131/500  
614/614 [=====] - 0s 135us/sample - loss: 2.5145 -  
y1\_output\_loss: 0.5611 - y2\_output\_loss: 1.9610 -  
y1\_output\_root\_mean\_squared\_error: 0.7506 - y2\_output\_root\_mean\_squared\_error:  
1.3968 - val\_loss: 2.5562 - val\_y1\_output\_loss: 0.4012 - val\_y2\_output\_loss:  
2.0871 - val\_y1\_output\_root\_mean\_squared\_error: 0.6306 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.4692  
Epoch 132/500  
614/614 [=====] - 0s 131us/sample - loss: 2.0963 -  
y1\_output\_loss: 0.4162 - y2\_output\_loss: 1.6646 -  
y1\_output\_root\_mean\_squared\_error: 0.6478 - y2\_output\_root\_mean\_squared\_error:  
1.2948 - val\_loss: 3.3239 - val\_y1\_output\_loss: 0.7470 - val\_y2\_output\_loss:  
2.4958 - val\_y1\_output\_root\_mean\_squared\_error: 0.8805 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.5965  
Epoch 133/500  
614/614 [=====] - 0s 130us/sample - loss: 1.7596 -

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y1_output_loss: 0.3634 - y2_output_loss: 1.3834 -
y1_output_root_mean_squared_error: 0.6038 - y2_output_root_mean_squared_error:
1.1811 - val_loss: 2.3157 - val_y1_output_loss: 0.5085 - val_y2_output_loss:
1.7292 - val_y1_output_root_mean_squared_error: 0.7251 -
val_y2_output_root_mean_squared_error: 1.3379
Epoch 134/500
614/614 [=====] - 0s 130us/sample - loss: 2.3767 -
y1_output_loss: 0.4913 - y2_output_loss: 1.9188 -
y1_output_root_mean_squared_error: 0.6940 - y2_output_root_mean_squared_error:
1.3767 - val_loss: 5.1854 - val_y1_output_loss: 1.1339 - val_y2_output_loss:
3.9007 - val_y1_output_root_mean_squared_error: 1.0740 -
val_y2_output_root_mean_squared_error: 2.0080
Epoch 135/500
614/614 [=====] - 0s 129us/sample - loss: 2.8605 -
y1_output_loss: 0.5952 - y2_output_loss: 2.2634 -
y1_output_root_mean_squared_error: 0.7683 - y2_output_root_mean_squared_error:
1.5067 - val_loss: 2.4630 - val_y1_output_loss: 0.4683 - val_y2_output_loss:
1.9237 - val_y1_output_root_mean_squared_error: 0.6930 -
val_y2_output_root_mean_squared_error: 1.4081
Epoch 136/500
614/614 [=====] - 0s 130us/sample - loss: 2.1439 -
y1_output_loss: 0.4634 - y2_output_loss: 1.6776 -
y1_output_root_mean_squared_error: 0.6782 - y2_output_root_mean_squared_error:
1.2976 - val_loss: 2.4402 - val_y1_output_loss: 0.4918 - val_y2_output_loss:
1.8875 - val_y1_output_root_mean_squared_error: 0.7124 -
val_y2_output_root_mean_squared_error: 1.3902
Epoch 137/500
614/614 [=====] - 0s 129us/sample - loss: 2.1131 -
y1_output_loss: 0.4568 - y2_output_loss: 1.6479 -
y1_output_root_mean_squared_error: 0.6771 - y2_output_root_mean_squared_error:
1.2863 - val_loss: 3.6934 - val_y1_output_loss: 0.3648 - val_y2_output_loss:
3.2061 - val_y1_output_root_mean_squared_error: 0.6122 -
val_y2_output_root_mean_squared_error: 1.8217
Epoch 138/500
614/614 [=====] - 0s 132us/sample - loss: 2.5275 -
y1_output_loss: 0.5316 - y2_output_loss: 1.9851 -
y1_output_root_mean_squared_error: 0.7276 - y2_output_root_mean_squared_error:
1.4135 - val_loss: 3.1980 - val_y1_output_loss: 0.7338 - val_y2_output_loss:
2.4813 - val_y1_output_root_mean_squared_error: 0.8195 -
val_y2_output_root_mean_squared_error: 1.5895
Epoch 139/500
614/614 [=====] - 0s 129us/sample - loss: 1.9399 -
y1_output_loss: 0.4328 - y2_output_loss: 1.5003 -
y1_output_root_mean_squared_error: 0.6563 - y2_output_root_mean_squared_error:
1.2285 - val_loss: 2.7164 - val_y1_output_loss: 0.6129 - val_y2_output_loss:
2.0301 - val_y1_output_root_mean_squared_error: 0.7833 -
val_y2_output_root_mean_squared_error: 1.4501
Epoch 140/500

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614/614 [=====] - 0s 128us/sample - loss: 2.3334 -
y1_output_loss: 0.5286 - y2_output_loss: 1.8131 -
y1_output_root_mean_squared_error: 0.7282 - y2_output_root_mean_squared_error:
1.3428 - val_loss: 3.0245 - val_y1_output_loss: 0.3740 - val_y2_output_loss:
2.5812 - val_y1_output_root_mean_squared_error: 0.6070 -
val_y2_output_root_mean_squared_error: 1.6297
Epoch 141/500
614/614 [=====] - 0s 132us/sample - loss: 2.0860 -
y1_output_loss: 0.3756 - y2_output_loss: 1.7123 -
y1_output_root_mean_squared_error: 0.6141 - y2_output_root_mean_squared_error:
1.3072 - val_loss: 3.7839 - val_y1_output_loss: 0.3660 - val_y2_output_loss:
3.3508 - val_y1_output_root_mean_squared_error: 0.6031 -
val_y2_output_root_mean_squared_error: 1.8493
Epoch 142/500
614/614 [=====] - 0s 128us/sample - loss: 2.0203 -
y1_output_loss: 0.4284 - y2_output_loss: 1.5955 -
y1_output_root_mean_squared_error: 0.6558 - y2_output_root_mean_squared_error:
1.2610 - val_loss: 2.6304 - val_y1_output_loss: 0.6627 - val_y2_output_loss:
1.9575 - val_y1_output_root_mean_squared_error: 0.8245 -
val_y2_output_root_mean_squared_error: 1.3967
Epoch 143/500
614/614 [=====] - 0s 127us/sample - loss: 4.3310 -
y1_output_loss: 1.1338 - y2_output_loss: 3.1687 -
y1_output_root_mean_squared_error: 1.0653 - y2_output_root_mean_squared_error:
1.7878 - val_loss: 2.3552 - val_y1_output_loss: 0.4946 - val_y2_output_loss:
1.7977 - val_y1_output_root_mean_squared_error: 0.7071 -
val_y2_output_root_mean_squared_error: 1.3621
Epoch 144/500
614/614 [=====] - 0s 128us/sample - loss: 1.8427 -
y1_output_loss: 0.3896 - y2_output_loss: 1.4429 -
y1_output_root_mean_squared_error: 0.6221 - y2_output_root_mean_squared_error:
1.2065 - val_loss: 3.0188 - val_y1_output_loss: 0.7513 - val_y2_output_loss:
2.1937 - val_y1_output_root_mean_squared_error: 0.8802 -
val_y2_output_root_mean_squared_error: 1.4980
Epoch 145/500
614/614 [=====] - 0s 127us/sample - loss: 2.3669 -
y1_output_loss: 0.4708 - y2_output_loss: 1.8822 -
y1_output_root_mean_squared_error: 0.6869 - y2_output_root_mean_squared_error:
1.3766 - val_loss: 2.0762 - val_y1_output_loss: 0.4267 - val_y2_output_loss:
1.6101 - val_y1_output_root_mean_squared_error: 0.6584 -
val_y2_output_root_mean_squared_error: 1.2817
Epoch 146/500
614/614 [=====] - 0s 130us/sample - loss: 2.4952 -
y1_output_loss: 0.4901 - y2_output_loss: 2.0083 -
y1_output_root_mean_squared_error: 0.6983 - y2_output_root_mean_squared_error:
1.4169 - val_loss: 2.5428 - val_y1_output_loss: 0.5822 - val_y2_output_loss:
1.9196 - val_y1_output_root_mean_squared_error: 0.7479 -
val_y2_output_root_mean_squared_error: 1.4083

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Epoch 147/500  
614/614 [=====] - 0s 128us/sample - loss: 2.1729 -  
y1\_output\_loss: 0.4482 - y2\_output\_loss: 1.7350 -  
y1\_output\_root\_mean\_squared\_error: 0.6697 - y2\_output\_root\_mean\_squared\_error:  
1.3131 - val\_loss: 1.9556 - val\_y1\_output\_loss: 0.3212 - val\_y2\_output\_loss:  
1.5770 - val\_y1\_output\_root\_mean\_squared\_error: 0.5694 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.2772  
Epoch 148/500  
614/614 [=====] - 0s 128us/sample - loss: 2.0391 -  
y1\_output\_loss: 0.4112 - y2\_output\_loss: 1.6496 -  
y1\_output\_root\_mean\_squared\_error: 0.6367 - y2\_output\_root\_mean\_squared\_error:  
1.2782 - val\_loss: 5.1440 - val\_y1\_output\_loss: 0.9844 - val\_y2\_output\_loss:  
4.0225 - val\_y1\_output\_root\_mean\_squared\_error: 0.9942 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.0385  
Epoch 149/500  
614/614 [=====] - 0s 128us/sample - loss: 2.1646 -  
y1\_output\_loss: 0.5225 - y2\_output\_loss: 1.6530 -  
y1\_output\_root\_mean\_squared\_error: 0.7208 - y2\_output\_root\_mean\_squared\_error:  
1.2826 - val\_loss: 5.0178 - val\_y1\_output\_loss: 0.7973 - val\_y2\_output\_loss:  
4.1049 - val\_y1\_output\_root\_mean\_squared\_error: 0.9048 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.0492  
Epoch 150/500  
614/614 [=====] - 0s 128us/sample - loss: 2.6585 -  
y1\_output\_loss: 0.6139 - y2\_output\_loss: 2.0288 -  
y1\_output\_root\_mean\_squared\_error: 0.7843 - y2\_output\_root\_mean\_squared\_error:  
1.4295 - val\_loss: 2.2573 - val\_y1\_output\_loss: 0.3408 - val\_y2\_output\_loss:  
1.8800 - val\_y1\_output\_root\_mean\_squared\_error: 0.5853 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.3837  
Epoch 151/500  
614/614 [=====] - 0s 128us/sample - loss: 2.3330 -  
y1\_output\_loss: 0.5708 - y2\_output\_loss: 1.7579 -  
y1\_output\_root\_mean\_squared\_error: 0.7529 - y2\_output\_root\_mean\_squared\_error:  
1.3289 - val\_loss: 5.2894 - val\_y1\_output\_loss: 0.6557 - val\_y2\_output\_loss:  
4.5841 - val\_y1\_output\_root\_mean\_squared\_error: 0.7876 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.1608  
Epoch 152/500  
614/614 [=====] - 0s 129us/sample - loss: 2.2402 -  
y1\_output\_loss: 0.4556 - y2\_output\_loss: 1.8064 -  
y1\_output\_root\_mean\_squared\_error: 0.6767 - y2\_output\_root\_mean\_squared\_error:  
1.3350 - val\_loss: 7.8576 - val\_y1\_output\_loss: 0.6709 - val\_y2\_output\_loss:  
7.0531 - val\_y1\_output\_root\_mean\_squared\_error: 0.8053 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.6850  
Epoch 153/500  
614/614 [=====] - 0s 129us/sample - loss: 2.1876 -  
y1\_output\_loss: 0.4255 - y2\_output\_loss: 1.7484 -  
y1\_output\_root\_mean\_squared\_error: 0.6554 - y2\_output\_root\_mean\_squared\_error:  
1.3259 - val\_loss: 2.0201 - val\_y1\_output\_loss: 0.2975 - val\_y2\_output\_loss:  
1.6667 - val\_y1\_output\_root\_mean\_squared\_error: 0.5415 -

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val_y2_output_root_mean_squared_error: 1.3141
Epoch 154/500
614/614 [=====] - 0s 128us/sample - loss: 1.8230 -
y1_output_loss: 0.3798 - y2_output_loss: 1.4327 -
y1_output_root_mean_squared_error: 0.6169 - y2_output_root_mean_squared_error:
1.2010 - val_loss: 3.0349 - val_y1_output_loss: 0.4470 - val_y2_output_loss:
2.5222 - val_y1_output_root_mean_squared_error: 0.6733 -
val_y2_output_root_mean_squared_error: 1.6067
Epoch 155/500
614/614 [=====] - 0s 129us/sample - loss: 1.7424 -
y1_output_loss: 0.3889 - y2_output_loss: 1.3676 -
y1_output_root_mean_squared_error: 0.6261 - y2_output_root_mean_squared_error:
1.1621 - val_loss: 3.9891 - val_y1_output_loss: 0.4123 - val_y2_output_loss:
3.5230 - val_y1_output_root_mean_squared_error: 0.6289 -
val_y2_output_root_mean_squared_error: 1.8957
Epoch 156/500
614/614 [=====] - 0s 129us/sample - loss: 1.9700 -
y1_output_loss: 0.3593 - y2_output_loss: 1.6295 -
y1_output_root_mean_squared_error: 0.6012 - y2_output_root_mean_squared_error:
1.2683 - val_loss: 2.0203 - val_y1_output_loss: 0.3326 - val_y2_output_loss:
1.6329 - val_y1_output_root_mean_squared_error: 0.5834 -
val_y2_output_root_mean_squared_error: 1.2961
Epoch 157/500
614/614 [=====] - 0s 130us/sample - loss: 2.0656 -
y1_output_loss: 0.4364 - y2_output_loss: 1.6104 -
y1_output_root_mean_squared_error: 0.6632 - y2_output_root_mean_squared_error:
1.2751 - val_loss: 1.9762 - val_y1_output_loss: 0.3624 - val_y2_output_loss:
1.5627 - val_y1_output_root_mean_squared_error: 0.5974 -
val_y2_output_root_mean_squared_error: 1.2725
Epoch 158/500
614/614 [=====] - 0s 131us/sample - loss: 1.8191 -
y1_output_loss: 0.4401 - y2_output_loss: 1.4167 -
y1_output_root_mean_squared_error: 0.6653 - y2_output_root_mean_squared_error:
1.1732 - val_loss: 15.1912 - val_y1_output_loss: 0.6927 - val_y2_output_loss:
14.2399 - val_y1_output_root_mean_squared_error: 0.8265 -
val_y2_output_root_mean_squared_error: 3.8090
Epoch 159/500
614/614 [=====] - 0s 130us/sample - loss: 2.6714 -
y1_output_loss: 0.5155 - y2_output_loss: 2.1834 -
y1_output_root_mean_squared_error: 0.7178 - y2_output_root_mean_squared_error:
1.4684 - val_loss: 5.9713 - val_y1_output_loss: 0.4308 - val_y2_output_loss:
5.4459 - val_y1_output_root_mean_squared_error: 0.6621 -
val_y2_output_root_mean_squared_error: 2.3522
Epoch 160/500
614/614 [=====] - 0s 131us/sample - loss: 2.6117 -
y1_output_loss: 0.5947 - y2_output_loss: 2.0067 -
y1_output_root_mean_squared_error: 0.7730 - y2_output_root_mean_squared_error:
1.4192 - val_loss: 2.1281 - val_y1_output_loss: 0.4588 - val_y2_output_loss:

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1.6289 - val\_y1\_output\_root\_mean\_squared\_error: 0.6676 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2971  
 Epoch 161/500  
 614/614 [=====] - 0s 128us/sample - loss: 1.8194 -  
 y1\_output\_loss: 0.3520 - y2\_output\_loss: 1.4719 -  
 y1\_output\_root\_mean\_squared\_error: 0.5957 - y2\_output\_root\_mean\_squared\_error:  
 1.2102 - val\_loss: 2.5621 - val\_y1\_output\_loss: 0.3463 - val\_y2\_output\_loss:  
 2.1593 - val\_y1\_output\_root\_mean\_squared\_error: 0.5934 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.4866  
 Epoch 162/500  
 614/614 [=====] - 0s 128us/sample - loss: 2.5945 -  
 y1\_output\_loss: 0.5001 - y2\_output\_loss: 2.1090 -  
 y1\_output\_root\_mean\_squared\_error: 0.7073 - y2\_output\_root\_mean\_squared\_error:  
 1.4471 - val\_loss: 4.8670 - val\_y1\_output\_loss: 0.6714 - val\_y2\_output\_loss:  
 4.1452 - val\_y1\_output\_root\_mean\_squared\_error: 0.8301 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.0440  
 Epoch 163/500  
 614/614 [=====] - 0s 127us/sample - loss: 2.6780 -  
 y1\_output\_loss: 0.7185 - y2\_output\_loss: 1.9467 -  
 y1\_output\_root\_mean\_squared\_error: 0.8479 - y2\_output\_root\_mean\_squared\_error:  
 1.3997 - val\_loss: 2.3904 - val\_y1\_output\_loss: 0.5324 - val\_y2\_output\_loss:  
 1.7893 - val\_y1\_output\_root\_mean\_squared\_error: 0.7392 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.3579  
 Epoch 164/500  
 614/614 [=====] - 0s 131us/sample - loss: 1.7179 -  
 y1\_output\_loss: 0.3371 - y2\_output\_loss: 1.3807 -  
 y1\_output\_root\_mean\_squared\_error: 0.5822 - y2\_output\_root\_mean\_squared\_error:  
 1.1743 - val\_loss: 1.8038 - val\_y1\_output\_loss: 0.3204 - val\_y2\_output\_loss:  
 1.4416 - val\_y1\_output\_root\_mean\_squared\_error: 0.5686 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2167  
 Epoch 165/500  
 614/614 [=====] - 0s 133us/sample - loss: 2.3738 -  
 y1\_output\_loss: 0.4505 - y2\_output\_loss: 1.9147 -  
 y1\_output\_root\_mean\_squared\_error: 0.6693 - y2\_output\_root\_mean\_squared\_error:  
 1.3878 - val\_loss: 1.9087 - val\_y1\_output\_loss: 0.3693 - val\_y2\_output\_loss:  
 1.4888 - val\_y1\_output\_root\_mean\_squared\_error: 0.6147 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2373  
 Epoch 166/500  
 614/614 [=====] - 0s 133us/sample - loss: 1.7556 -  
 y1\_output\_loss: 0.3652 - y2\_output\_loss: 1.3881 -  
 y1\_output\_root\_mean\_squared\_error: 0.6009 - y2\_output\_root\_mean\_squared\_error:  
 1.1809 - val\_loss: 2.5650 - val\_y1\_output\_loss: 0.3553 - val\_y2\_output\_loss:  
 2.1788 - val\_y1\_output\_root\_mean\_squared\_error: 0.5761 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.4944  
 Epoch 167/500  
 614/614 [=====] - 0s 135us/sample - loss: 1.9838 -  
 y1\_output\_loss: 0.4002 - y2\_output\_loss: 1.5714 -  
 y1\_output\_root\_mean\_squared\_error: 0.6356 - y2\_output\_root\_mean\_squared\_error:

1.2569 - val\_loss: 1.9602 - val\_y1\_output\_loss: 0.3375 - val\_y2\_output\_loss:  
 1.5811 - val\_y1\_output\_root\_mean\_squared\_error: 0.5758 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2762  
 Epoch 168/500  
 614/614 [=====] - 0s 134us/sample - loss: 1.9067 -  
 y1\_output\_loss: 0.3365 - y2\_output\_loss: 1.5949 -  
 y1\_output\_root\_mean\_squared\_error: 0.5789 - y2\_output\_root\_mean\_squared\_error:  
 1.2536 - val\_loss: 2.5676 - val\_y1\_output\_loss: 0.3361 - val\_y2\_output\_loss:  
 2.1900 - val\_y1\_output\_root\_mean\_squared\_error: 0.5833 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.4924  
 Epoch 169/500  
 614/614 [=====] - 0s 135us/sample - loss: 2.1959 -  
 y1\_output\_loss: 0.4263 - y2\_output\_loss: 1.7650 -  
 y1\_output\_root\_mean\_squared\_error: 0.6512 - y2\_output\_root\_mean\_squared\_error:  
 1.3311 - val\_loss: 5.6987 - val\_y1\_output\_loss: 1.2554 - val\_y2\_output\_loss:  
 4.4265 - val\_y1\_output\_root\_mean\_squared\_error: 1.0919 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.1228  
 Epoch 170/500  
 614/614 [=====] - 0s 132us/sample - loss: 1.6532 -  
 y1\_output\_loss: 0.3734 - y2\_output\_loss: 1.2676 -  
 y1\_output\_root\_mean\_squared\_error: 0.6134 - y2\_output\_root\_mean\_squared\_error:  
 1.1300 - val\_loss: 1.6852 - val\_y1\_output\_loss: 0.2775 - val\_y2\_output\_loss:  
 1.3758 - val\_y1\_output\_root\_mean\_squared\_error: 0.5196 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1897  
 Epoch 171/500  
 614/614 [=====] - 0s 133us/sample - loss: 1.5725 -  
 y1\_output\_loss: 0.3133 - y2\_output\_loss: 1.2634 -  
 y1\_output\_root\_mean\_squared\_error: 0.5611 - y2\_output\_root\_mean\_squared\_error:  
 1.1214 - val\_loss: 2.1654 - val\_y1\_output\_loss: 0.3169 - val\_y2\_output\_loss:  
 1.8045 - val\_y1\_output\_root\_mean\_squared\_error: 0.5645 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.3590  
 Epoch 172/500  
 614/614 [=====] - 0s 136us/sample - loss: 1.7354 -  
 y1\_output\_loss: 0.4160 - y2\_output\_loss: 1.3114 -  
 y1\_output\_root\_mean\_squared\_error: 0.6457 - y2\_output\_root\_mean\_squared\_error:  
 1.1483 - val\_loss: 1.7275 - val\_y1\_output\_loss: 0.3022 - val\_y2\_output\_loss:  
 1.3871 - val\_y1\_output\_root\_mean\_squared\_error: 0.5421 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1973  
 Epoch 173/500  
 614/614 [=====] - 0s 134us/sample - loss: 1.8190 -  
 y1\_output\_loss: 0.3492 - y2\_output\_loss: 1.4667 -  
 y1\_output\_root\_mean\_squared\_error: 0.5884 - y2\_output\_root\_mean\_squared\_error:  
 1.2136 - val\_loss: 2.2313 - val\_y1\_output\_loss: 0.4508 - val\_y2\_output\_loss:  
 1.7473 - val\_y1\_output\_root\_mean\_squared\_error: 0.6794 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.3303  
 Epoch 174/500  
 614/614 [=====] - 0s 133us/sample - loss: 2.2941 -  
 y1\_output\_loss: 0.4969 - y2\_output\_loss: 1.7863 -

y1\_output\_root\_mean\_squared\_error: 0.7047 - y2\_output\_root\_mean\_squared\_error:  
 1.3407 - val\_loss: 1.7525 - val\_y1\_output\_loss: 0.3640 - val\_y2\_output\_loss:  
 1.3735 - val\_y1\_output\_root\_mean\_squared\_error: 0.5828 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1886  
 Epoch 175/500  
 614/614 [=====] - 0s 128us/sample - loss: 3.8700 -  
 y1\_output\_loss: 0.8203 - y2\_output\_loss: 3.0866 -  
 y1\_output\_root\_mean\_squared\_error: 0.8935 - y2\_output\_root\_mean\_squared\_error:  
 1.7526 - val\_loss: 3.6405 - val\_y1\_output\_loss: 1.1025 - val\_y2\_output\_loss:  
 2.5367 - val\_y1\_output\_root\_mean\_squared\_error: 1.0417 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.5986  
 Epoch 176/500  
 614/614 [=====] - 0s 128us/sample - loss: 2.1209 -  
 y1\_output\_loss: 0.4178 - y2\_output\_loss: 1.6980 -  
 y1\_output\_root\_mean\_squared\_error: 0.6490 - y2\_output\_root\_mean\_squared\_error:  
 1.3038 - val\_loss: 1.9972 - val\_y1\_output\_loss: 0.2733 - val\_y2\_output\_loss:  
 1.6964 - val\_y1\_output\_root\_mean\_squared\_error: 0.5128 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.3169  
 Epoch 177/500  
 614/614 [=====] - 0s 133us/sample - loss: 1.5797 -  
 y1\_output\_loss: 0.2957 - y2\_output\_loss: 1.2715 -  
 y1\_output\_root\_mean\_squared\_error: 0.5450 - y2\_output\_root\_mean\_squared\_error:  
 1.1325 - val\_loss: 1.8837 - val\_y1\_output\_loss: 0.3559 - val\_y2\_output\_loss:  
 1.4807 - val\_y1\_output\_root\_mean\_squared\_error: 0.6038 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2325  
 Epoch 178/500  
 614/614 [=====] - 0s 133us/sample - loss: 1.6423 -  
 y1\_output\_loss: 0.3043 - y2\_output\_loss: 1.3476 -  
 y1\_output\_root\_mean\_squared\_error: 0.5467 - y2\_output\_root\_mean\_squared\_error:  
 1.1591 - val\_loss: 3.6177 - val\_y1\_output\_loss: 0.9184 - val\_y2\_output\_loss:  
 2.7012 - val\_y1\_output\_root\_mean\_squared\_error: 0.9663 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.6383  
 Epoch 179/500  
 614/614 [=====] - 0s 127us/sample - loss: 1.8672 -  
 y1\_output\_loss: 0.3694 - y2\_output\_loss: 1.4833 -  
 y1\_output\_root\_mean\_squared\_error: 0.6087 - y2\_output\_root\_mean\_squared\_error:  
 1.2234 - val\_loss: 2.0032 - val\_y1\_output\_loss: 0.4198 - val\_y2\_output\_loss:  
 1.5458 - val\_y1\_output\_root\_mean\_squared\_error: 0.6400 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2624  
 Epoch 180/500  
 614/614 [=====] - 0s 134us/sample - loss: 1.5543 -  
 y1\_output\_loss: 0.3142 - y2\_output\_loss: 1.2326 -  
 y1\_output\_root\_mean\_squared\_error: 0.5585 - y2\_output\_root\_mean\_squared\_error:  
 1.1146 - val\_loss: 1.8400 - val\_y1\_output\_loss: 0.2581 - val\_y2\_output\_loss:  
 1.5389 - val\_y1\_output\_root\_mean\_squared\_error: 0.5084 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2576  
 Epoch 181/500  
 614/614 [=====] - 0s 138us/sample - loss: 1.3631 -

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y1_output_loss: 0.2616 - y2_output_loss: 1.0902 -
y1_output_root_mean_squared_error: 0.5135 - y2_output_root_mean_squared_error:
1.0485 - val_loss: 1.8417 - val_y1_output_loss: 0.2503 - val_y2_output_loss:
1.5587 - val_y1_output_root_mean_squared_error: 0.4856 -
val_y2_output_root_mean_squared_error: 1.2672
Epoch 182/500
614/614 [=====] - 0s 132us/sample - loss: 2.3114 -
y1_output_loss: 0.4474 - y2_output_loss: 1.8757 -
y1_output_root_mean_squared_error: 0.6666 - y2_output_root_mean_squared_error:
1.3664 - val_loss: 5.0297 - val_y1_output_loss: 0.9750 - val_y2_output_loss:
4.0622 - val_y1_output_root_mean_squared_error: 0.9543 -
val_y2_output_root_mean_squared_error: 2.0295
Epoch 183/500
614/614 [=====] - 0s 133us/sample - loss: 1.2785 -
y1_output_loss: 0.2871 - y2_output_loss: 0.9906 -
y1_output_root_mean_squared_error: 0.5338 - y2_output_root_mean_squared_error:
0.9968 - val_loss: 1.9538 - val_y1_output_loss: 0.3157 - val_y2_output_loss:
1.6192 - val_y1_output_root_mean_squared_error: 0.5704 -
val_y2_output_root_mean_squared_error: 1.2761
Epoch 184/500
614/614 [=====] - 0s 134us/sample - loss: 2.2754 -
y1_output_loss: 0.4912 - y2_output_loss: 1.7915 -
y1_output_root_mean_squared_error: 0.7008 - y2_output_root_mean_squared_error:
1.3358 - val_loss: 5.5410 - val_y1_output_loss: 1.8082 - val_y2_output_loss:
3.5730 - val_y1_output_root_mean_squared_error: 1.3624 -
val_y2_output_root_mean_squared_error: 1.9196
Epoch 185/500
614/614 [=====] - 0s 127us/sample - loss: 2.2521 -
y1_output_loss: 0.4029 - y2_output_loss: 2.0083 -
y1_output_root_mean_squared_error: 0.6274 - y2_output_root_mean_squared_error:
1.3633 - val_loss: 14.4494 - val_y1_output_loss: 1.8501 - val_y2_output_loss:
12.2486 - val_y1_output_root_mean_squared_error: 1.3854 -
val_y2_output_root_mean_squared_error: 3.5398
Epoch 186/500
614/614 [=====] - 0s 132us/sample - loss: 2.2389 -
y1_output_loss: 0.4016 - y2_output_loss: 1.8179 -
y1_output_root_mean_squared_error: 0.6360 - y2_output_root_mean_squared_error:
1.3544 - val_loss: 1.6165 - val_y1_output_loss: 0.2433 - val_y2_output_loss:
1.3568 - val_y1_output_root_mean_squared_error: 0.4818 -
val_y2_output_root_mean_squared_error: 1.1766
Epoch 187/500
614/614 [=====] - 0s 132us/sample - loss: 1.4129 -
y1_output_loss: 0.3014 - y2_output_loss: 1.1181 -
y1_output_root_mean_squared_error: 0.5489 - y2_output_root_mean_squared_error:
1.0543 - val_loss: 4.1811 - val_y1_output_loss: 0.6033 - val_y2_output_loss:
3.5851 - val_y1_output_root_mean_squared_error: 0.7456 -
val_y2_output_root_mean_squared_error: 1.9040
Epoch 188/500

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614/614 [=====] - 0s 129us/sample - loss: 1.8876 -
y1_output_loss: 0.3738 - y2_output_loss: 1.5291 -
y1_output_root_mean_squared_error: 0.6034 - y2_output_root_mean_squared_error:
1.2343 - val_loss: 2.0666 - val_y1_output_loss: 0.4743 - val_y2_output_loss:
1.5431 - val_y1_output_root_mean_squared_error: 0.6976 -
val_y2_output_root_mean_squared_error: 1.2570
Epoch 189/500
614/614 [=====] - 0s 133us/sample - loss: 1.4499 -
y1_output_loss: 0.2997 - y2_output_loss: 1.1383 -
y1_output_root_mean_squared_error: 0.5495 - y2_output_root_mean_squared_error:
1.0714 - val_loss: 2.2732 - val_y1_output_loss: 0.5199 - val_y2_output_loss:
1.7469 - val_y1_output_root_mean_squared_error: 0.6945 -
val_y2_output_root_mean_squared_error: 1.3382
Epoch 190/500
614/614 [=====] - 0s 133us/sample - loss: 1.4137 -
y1_output_loss: 0.2691 - y2_output_loss: 1.1577 -
y1_output_root_mean_squared_error: 0.5196 - y2_output_root_mean_squared_error:
1.0695 - val_loss: 5.0564 - val_y1_output_loss: 0.7294 - val_y2_output_loss:
4.3226 - val_y1_output_root_mean_squared_error: 0.8276 -
val_y2_output_root_mean_squared_error: 2.0908
Epoch 191/500
614/614 [=====] - 0s 137us/sample - loss: 2.5779 -
y1_output_loss: 0.5460 - y2_output_loss: 2.0168 -
y1_output_root_mean_squared_error: 0.7416 - y2_output_root_mean_squared_error:
1.4240 - val_loss: 2.1469 - val_y1_output_loss: 0.3886 - val_y2_output_loss:
1.7514 - val_y1_output_root_mean_squared_error: 0.5984 -
val_y2_output_root_mean_squared_error: 1.3375
Epoch 192/500
614/614 [=====] - 0s 134us/sample - loss: 1.7443 -
y1_output_loss: 0.3414 - y2_output_loss: 1.3911 -
y1_output_root_mean_squared_error: 0.5862 - y2_output_root_mean_squared_error:
1.1835 - val_loss: 1.6024 - val_y1_output_loss: 0.2622 - val_y2_output_loss:
1.3106 - val_y1_output_root_mean_squared_error: 0.5056 -
val_y2_output_root_mean_squared_error: 1.1605
Epoch 193/500
614/614 [=====] - 0s 138us/sample - loss: 1.4388 -
y1_output_loss: 0.2709 - y2_output_loss: 1.1644 -
y1_output_root_mean_squared_error: 0.5180 - y2_output_root_mean_squared_error:
1.0819 - val_loss: 1.8997 - val_y1_output_loss: 0.2518 - val_y2_output_loss:
1.6666 - val_y1_output_root_mean_squared_error: 0.5043 -
val_y2_output_root_mean_squared_error: 1.2827
Epoch 194/500
614/614 [=====] - 0s 131us/sample - loss: 1.4644 -
y1_output_loss: 0.2830 - y2_output_loss: 1.1754 -
y1_output_root_mean_squared_error: 0.5342 - y2_output_root_mean_squared_error:
1.0859 - val_loss: 2.2533 - val_y1_output_loss: 0.2684 - val_y2_output_loss:
1.9461 - val_y1_output_root_mean_squared_error: 0.5053 -
val_y2_output_root_mean_squared_error: 1.4135

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Epoch 195/500

614/614 [=====] - 0s 129us/sample - loss: 1.3337 -  
y1\_output\_loss: 0.2336 - y2\_output\_loss: 1.0920 -  
y1\_output\_root\_mean\_squared\_error: 0.4843 - y2\_output\_root\_mean\_squared\_error:  
1.0484 - val\_loss: 1.9836 - val\_y1\_output\_loss: 0.4624 - val\_y2\_output\_loss:  
1.4660 - val\_y1\_output\_root\_mean\_squared\_error: 0.6834 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.2315

Epoch 196/500

614/614 [=====] - 0s 128us/sample - loss: 1.3479 -  
y1\_output\_loss: 0.2725 - y2\_output\_loss: 1.0634 -  
y1\_output\_root\_mean\_squared\_error: 0.5243 - y2\_output\_root\_mean\_squared\_error:  
1.0359 - val\_loss: 1.5926 - val\_y1\_output\_loss: 0.2769 - val\_y2\_output\_loss:  
1.2793 - val\_y1\_output\_root\_mean\_squared\_error: 0.5266 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1469

Epoch 197/500

614/614 [=====] - 0s 129us/sample - loss: 1.3838 -  
y1\_output\_loss: 0.2863 - y2\_output\_loss: 1.0883 -  
y1\_output\_root\_mean\_squared\_error: 0.5364 - y2\_output\_root\_mean\_squared\_error:  
1.0470 - val\_loss: 1.5830 - val\_y1\_output\_loss: 0.2450 - val\_y2\_output\_loss:  
1.3030 - val\_y1\_output\_root\_mean\_squared\_error: 0.4945 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1569

Epoch 198/500

614/614 [=====] - 0s 129us/sample - loss: 1.4436 -  
y1\_output\_loss: 0.2797 - y2\_output\_loss: 1.1647 -  
y1\_output\_root\_mean\_squared\_error: 0.5279 - y2\_output\_root\_mean\_squared\_error:  
1.0793 - val\_loss: 2.3861 - val\_y1\_output\_loss: 0.5851 - val\_y2\_output\_loss:  
1.7357 - val\_y1\_output\_root\_mean\_squared\_error: 0.7686 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.3399

Epoch 199/500

614/614 [=====] - 0s 128us/sample - loss: 2.4831 -  
y1\_output\_loss: 0.5146 - y2\_output\_loss: 1.9509 -  
y1\_output\_root\_mean\_squared\_error: 0.7179 - y2\_output\_root\_mean\_squared\_error:  
1.4028 - val\_loss: 2.3814 - val\_y1\_output\_loss: 0.5455 - val\_y2\_output\_loss:  
1.7687 - val\_y1\_output\_root\_mean\_squared\_error: 0.7510 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.3481

Epoch 200/500

614/614 [=====] - 0s 130us/sample - loss: 1.8357 -  
y1\_output\_loss: 0.3854 - y2\_output\_loss: 1.4534 -  
y1\_output\_root\_mean\_squared\_error: 0.6210 - y2\_output\_root\_mean\_squared\_error:  
1.2042 - val\_loss: 2.5654 - val\_y1\_output\_loss: 0.2402 - val\_y2\_output\_loss:  
2.2958 - val\_y1\_output\_root\_mean\_squared\_error: 0.4915 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.5244

Epoch 201/500

614/614 [=====] - 0s 129us/sample - loss: 1.8799 -  
y1\_output\_loss: 0.4003 - y2\_output\_loss: 1.4822 -  
y1\_output\_root\_mean\_squared\_error: 0.6310 - y2\_output\_root\_mean\_squared\_error:  
1.2173 - val\_loss: 1.8092 - val\_y1\_output\_loss: 0.2613 - val\_y2\_output\_loss:  
1.5336 - val\_y1\_output\_root\_mean\_squared\_error: 0.5120 -

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val_y2_output_root_mean_squared_error: 1.2438
Epoch 202/500
614/614 [=====] - 0s 129us/sample - loss: 1.2998 -
y1_output_loss: 0.2426 - y2_output_loss: 1.0472 -
y1_output_root_mean_squared_error: 0.4948 - y2_output_root_mean_squared_error:
1.0271 - val_loss: 1.6031 - val_y1_output_loss: 0.2985 - val_y2_output_loss:
1.2630 - val_y1_output_root_mean_squared_error: 0.5544 -
val_y2_output_root_mean_squared_error: 1.1383
Epoch 203/500
614/614 [=====] - 0s 130us/sample - loss: 1.4131 -
y1_output_loss: 0.3373 - y2_output_loss: 1.0648 -
y1_output_root_mean_squared_error: 0.5831 - y2_output_root_mean_squared_error:
1.0359 - val_loss: 1.7744 - val_y1_output_loss: 0.2955 - val_y2_output_loss:
1.4322 - val_y1_output_root_mean_squared_error: 0.5447 -
val_y2_output_root_mean_squared_error: 1.2156
Epoch 204/500
614/614 [=====] - 0s 128us/sample - loss: 1.5288 -
y1_output_loss: 0.2973 - y2_output_loss: 1.2306 -
y1_output_root_mean_squared_error: 0.5454 - y2_output_root_mean_squared_error:
1.1097 - val_loss: 5.3833 - val_y1_output_loss: 0.6897 - val_y2_output_loss:
4.5654 - val_y1_output_root_mean_squared_error: 0.8430 -
val_y2_output_root_mean_squared_error: 2.1616
Epoch 205/500
614/614 [=====] - 0s 129us/sample - loss: 1.5453 -
y1_output_loss: 0.3341 - y2_output_loss: 1.1983 -
y1_output_root_mean_squared_error: 0.5807 - y2_output_root_mean_squared_error:
1.0991 - val_loss: 2.0463 - val_y1_output_loss: 0.4390 - val_y2_output_loss:
1.6001 - val_y1_output_root_mean_squared_error: 0.6401 -
val_y2_output_root_mean_squared_error: 1.2793
Epoch 206/500
614/614 [=====] - 0s 129us/sample - loss: 2.0980 -
y1_output_loss: 0.4484 - y2_output_loss: 1.6354 -
y1_output_root_mean_squared_error: 0.6719 - y2_output_root_mean_squared_error:
1.2832 - val_loss: 2.2675 - val_y1_output_loss: 0.3349 - val_y2_output_loss:
1.8955 - val_y1_output_root_mean_squared_error: 0.5877 -
val_y2_output_root_mean_squared_error: 1.3864
Epoch 207/500
614/614 [=====] - 0s 128us/sample - loss: 1.5929 -
y1_output_loss: 0.3158 - y2_output_loss: 1.2657 -
y1_output_root_mean_squared_error: 0.5644 - y2_output_root_mean_squared_error:
1.1288 - val_loss: 2.0029 - val_y1_output_loss: 0.2960 - val_y2_output_loss:
1.6669 - val_y1_output_root_mean_squared_error: 0.5341 -
val_y2_output_root_mean_squared_error: 1.3106
Epoch 208/500
614/614 [=====] - 0s 128us/sample - loss: 1.4783 -
y1_output_loss: 0.2449 - y2_output_loss: 1.2581 -
y1_output_root_mean_squared_error: 0.4963 - y2_output_root_mean_squared_error:
1.1099 - val_loss: 2.9580 - val_y1_output_loss: 0.3997 - val_y2_output_loss:

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2.5147 - val\_y1\_output\_root\_mean\_squared\_error: 0.6419 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.5956  
 Epoch 209/500  
 614/614 [=====] - 0s 130us/sample - loss: 2.1381 -  
 y1\_output\_loss: 0.4431 - y2\_output\_loss: 1.6952 -  
 y1\_output\_root\_mean\_squared\_error: 0.6685 - y2\_output\_root\_mean\_squared\_error:  
 1.3005 - val\_loss: 3.3721 - val\_y1\_output\_loss: 0.2941 - val\_y2\_output\_loss:  
 3.0059 - val\_y1\_output\_root\_mean\_squared\_error: 0.5478 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.7527  
 Epoch 210/500  
 614/614 [=====] - 0s 130us/sample - loss: 1.4854 -  
 y1\_output\_loss: 0.2633 - y2\_output\_loss: 1.2101 -  
 y1\_output\_root\_mean\_squared\_error: 0.5151 - y2\_output\_root\_mean\_squared\_error:  
 1.1046 - val\_loss: 2.0017 - val\_y1\_output\_loss: 0.2999 - val\_y2\_output\_loss:  
 1.6734 - val\_y1\_output\_root\_mean\_squared\_error: 0.5528 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.3023  
 Epoch 211/500  
 614/614 [=====] - 0s 130us/sample - loss: 1.3712 -  
 y1\_output\_loss: 0.2720 - y2\_output\_loss: 1.0931 -  
 y1\_output\_root\_mean\_squared\_error: 0.5227 - y2\_output\_root\_mean\_squared\_error:  
 1.0479 - val\_loss: 1.5400 - val\_y1\_output\_loss: 0.2181 - val\_y2\_output\_loss:  
 1.2821 - val\_y1\_output\_root\_mean\_squared\_error: 0.4715 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1479  
 Epoch 212/500  
 614/614 [=====] - 0s 133us/sample - loss: 1.9317 -  
 y1\_output\_loss: 0.3508 - y2\_output\_loss: 1.5674 -  
 y1\_output\_root\_mean\_squared\_error: 0.5925 - y2\_output\_root\_mean\_squared\_error:  
 1.2572 - val\_loss: 1.6100 - val\_y1\_output\_loss: 0.2690 - val\_y2\_output\_loss:  
 1.3050 - val\_y1\_output\_root\_mean\_squared\_error: 0.5224 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1563  
 Epoch 213/500  
 614/614 [=====] - 0s 128us/sample - loss: 1.3265 -  
 y1\_output\_loss: 0.2564 - y2\_output\_loss: 1.0653 -  
 y1\_output\_root\_mean\_squared\_error: 0.5024 - y2\_output\_root\_mean\_squared\_error:  
 1.0364 - val\_loss: 1.8967 - val\_y1\_output\_loss: 0.5736 - val\_y2\_output\_loss:  
 1.2885 - val\_y1\_output\_root\_mean\_squared\_error: 0.7650 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1452  
 Epoch 214/500  
 614/614 [=====] - 0s 134us/sample - loss: 1.5637 -  
 y1\_output\_loss: 0.3903 - y2\_output\_loss: 1.1654 -  
 y1\_output\_root\_mean\_squared\_error: 0.6269 - y2\_output\_root\_mean\_squared\_error:  
 1.0820 - val\_loss: 2.1119 - val\_y1\_output\_loss: 0.2680 - val\_y2\_output\_loss:  
 1.7957 - val\_y1\_output\_root\_mean\_squared\_error: 0.5186 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.3576  
 Epoch 215/500  
 614/614 [=====] - 0s 129us/sample - loss: 1.4236 -  
 y1\_output\_loss: 0.2447 - y2\_output\_loss: 1.1740 -  
 y1\_output\_root\_mean\_squared\_error: 0.4945 - y2\_output\_root\_mean\_squared\_error:

1.0859 - val\_loss: 1.8376 - val\_y1\_output\_loss: 0.4015 - val\_y2\_output\_loss:  
 1.3968 - val\_y1\_output\_root\_mean\_squared\_error: 0.6396 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1952  
 Epoch 216/500  
 614/614 [=====] - 0s 128us/sample - loss: 1.3794 -  
 y1\_output\_loss: 0.2835 - y2\_output\_loss: 1.0914 -  
 y1\_output\_root\_mean\_squared\_error: 0.5347 - y2\_output\_root\_mean\_squared\_error:  
 1.0457 - val\_loss: 2.0562 - val\_y1\_output\_loss: 0.3755 - val\_y2\_output\_loss:  
 1.6895 - val\_y1\_output\_root\_mean\_squared\_error: 0.5837 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.3098  
 Epoch 217/500  
 614/614 [=====] - 0s 128us/sample - loss: 1.0931 -  
 y1\_output\_loss: 0.2161 - y2\_output\_loss: 0.8797 -  
 y1\_output\_root\_mean\_squared\_error: 0.4628 - y2\_output\_root\_mean\_squared\_error:  
 0.9375 - val\_loss: 3.4022 - val\_y1\_output\_loss: 0.9094 - val\_y2\_output\_loss:  
 2.5316 - val\_y1\_output\_root\_mean\_squared\_error: 0.9181 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.5998  
 Epoch 218/500  
 614/614 [=====] - 0s 128us/sample - loss: 1.1738 -  
 y1\_output\_loss: 0.2468 - y2\_output\_loss: 0.9188 -  
 y1\_output\_root\_mean\_squared\_error: 0.4981 - y2\_output\_root\_mean\_squared\_error:  
 0.9622 - val\_loss: 1.6578 - val\_y1\_output\_loss: 0.3319 - val\_y2\_output\_loss:  
 1.3012 - val\_y1\_output\_root\_mean\_squared\_error: 0.5767 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1512  
 Epoch 219/500  
 614/614 [=====] - 0s 129us/sample - loss: 1.1998 -  
 y1\_output\_loss: 0.2354 - y2\_output\_loss: 0.9620 -  
 y1\_output\_root\_mean\_squared\_error: 0.4871 - y2\_output\_root\_mean\_squared\_error:  
 0.9811 - val\_loss: 1.7069 - val\_y1\_output\_loss: 0.2183 - val\_y2\_output\_loss:  
 1.4443 - val\_y1\_output\_root\_mean\_squared\_error: 0.4656 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2207  
 Epoch 220/500  
 614/614 [=====] - 0s 129us/sample - loss: 1.1881 -  
 y1\_output\_loss: 0.2331 - y2\_output\_loss: 0.9475 -  
 y1\_output\_root\_mean\_squared\_error: 0.4841 - y2\_output\_root\_mean\_squared\_error:  
 0.9766 - val\_loss: 1.4957 - val\_y1\_output\_loss: 0.2559 - val\_y2\_output\_loss:  
 1.2029 - val\_y1\_output\_root\_mean\_squared\_error: 0.5119 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1107  
 Epoch 221/500  
 614/614 [=====] - 0s 129us/sample - loss: 1.2645 -  
 y1\_output\_loss: 0.2232 - y2\_output\_loss: 1.0627 -  
 y1\_output\_root\_mean\_squared\_error: 0.4714 - y2\_output\_root\_mean\_squared\_error:  
 1.0209 - val\_loss: 2.1740 - val\_y1\_output\_loss: 0.4135 - val\_y2\_output\_loss:  
 1.7467 - val\_y1\_output\_root\_mean\_squared\_error: 0.6201 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.3377  
 Epoch 222/500  
 614/614 [=====] - 0s 130us/sample - loss: 1.3997 -  
 y1\_output\_loss: 0.2816 - y2\_output\_loss: 1.1241 -

y1\_output\_root\_mean\_squared\_error: 0.5289 - y2\_output\_root\_mean\_squared\_error:  
1.0583 - val\_loss: 2.4133 - val\_y1\_output\_loss: 0.5191 - val\_y2\_output\_loss:  
1.8896 - val\_y1\_output\_root\_mean\_squared\_error: 0.6942 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.3897  
Epoch 223/500  
614/614 [=====] - 0s 129us/sample - loss: 1.3138 -  
y1\_output\_loss: 0.2873 - y2\_output\_loss: 1.0269 -  
y1\_output\_root\_mean\_squared\_error: 0.5347 - y2\_output\_root\_mean\_squared\_error:  
1.0139 - val\_loss: 1.8287 - val\_y1\_output\_loss: 0.3536 - val\_y2\_output\_loss:  
1.4555 - val\_y1\_output\_root\_mean\_squared\_error: 0.5813 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.2210  
Epoch 224/500  
614/614 [=====] - 0s 129us/sample - loss: 1.2687 -  
y1\_output\_loss: 0.2380 - y2\_output\_loss: 1.0276 -  
y1\_output\_root\_mean\_squared\_error: 0.4873 - y2\_output\_root\_mean\_squared\_error:  
1.0155 - val\_loss: 1.4440 - val\_y1\_output\_loss: 0.2104 - val\_y2\_output\_loss:  
1.2151 - val\_y1\_output\_root\_mean\_squared\_error: 0.4477 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1152  
Epoch 225/500  
614/614 [=====] - 0s 130us/sample - loss: 1.6288 -  
y1\_output\_loss: 0.3638 - y2\_output\_loss: 1.2544 -  
y1\_output\_root\_mean\_squared\_error: 0.6032 - y2\_output\_root\_mean\_squared\_error:  
1.1247 - val\_loss: 1.8933 - val\_y1\_output\_loss: 0.2809 - val\_y2\_output\_loss:  
1.5831 - val\_y1\_output\_root\_mean\_squared\_error: 0.5397 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.2657  
Epoch 226/500  
614/614 [=====] - 0s 131us/sample - loss: 1.1032 -  
y1\_output\_loss: 0.2240 - y2\_output\_loss: 0.8721 -  
y1\_output\_root\_mean\_squared\_error: 0.4736 - y2\_output\_root\_mean\_squared\_error:  
0.9375 - val\_loss: 2.1685 - val\_y1\_output\_loss: 0.3018 - val\_y2\_output\_loss:  
1.8291 - val\_y1\_output\_root\_mean\_squared\_error: 0.5548 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.3640  
Epoch 227/500  
614/614 [=====] - 0s 131us/sample - loss: 1.2095 -  
y1\_output\_loss: 0.2520 - y2\_output\_loss: 0.9639 -  
y1\_output\_root\_mean\_squared\_error: 0.5025 - y2\_output\_root\_mean\_squared\_error:  
0.9783 - val\_loss: 1.5149 - val\_y1\_output\_loss: 0.3139 - val\_y2\_output\_loss:  
1.1864 - val\_y1\_output\_root\_mean\_squared\_error: 0.5567 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0977  
Epoch 228/500  
614/614 [=====] - 0s 132us/sample - loss: 1.6403 -  
y1\_output\_loss: 0.3405 - y2\_output\_loss: 1.2862 -  
y1\_output\_root\_mean\_squared\_error: 0.5859 - y2\_output\_root\_mean\_squared\_error:  
1.1389 - val\_loss: 2.9629 - val\_y1\_output\_loss: 0.4500 - val\_y2\_output\_loss:  
2.5071 - val\_y1\_output\_root\_mean\_squared\_error: 0.6403 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.5978  
Epoch 229/500  
614/614 [=====] - 0s 133us/sample - loss: 1.6224 -

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y1_output_loss: 0.3180 - y2_output_loss: 1.2966 -
y1_output_root_mean_squared_error: 0.5660 - y2_output_root_mean_squared_error:
1.1411 - val_loss: 1.6865 - val_y1_output_loss: 0.2277 - val_y2_output_loss:
1.4256 - val_y1_output_root_mean_squared_error: 0.4777 -
val_y2_output_root_mean_squared_error: 1.2076
Epoch 230/500
614/614 [=====] - 0s 131us/sample - loss: 1.7803 -
y1_output_loss: 0.3073 - y2_output_loss: 1.5019 -
y1_output_root_mean_squared_error: 0.5543 - y2_output_root_mean_squared_error:
1.2137 - val_loss: 6.7078 - val_y1_output_loss: 1.0710 - val_y2_output_loss:
5.4276 - val_y1_output_root_mean_squared_error: 1.0531 -
val_y2_output_root_mean_squared_error: 2.3662
Epoch 231/500
614/614 [=====] - 0s 131us/sample - loss: 1.1458 -
y1_output_loss: 0.2197 - y2_output_loss: 0.9183 -
y1_output_root_mean_squared_error: 0.4687 - y2_output_root_mean_squared_error:
0.9624 - val_loss: 1.7181 - val_y1_output_loss: 0.2898 - val_y2_output_loss:
1.3946 - val_y1_output_root_mean_squared_error: 0.5409 -
val_y2_output_root_mean_squared_error: 1.1939
Epoch 232/500
614/614 [=====] - 0s 128us/sample - loss: 0.9163 -
y1_output_loss: 0.1960 - y2_output_loss: 0.7284 -
y1_output_root_mean_squared_error: 0.4443 - y2_output_root_mean_squared_error:
0.8479 - val_loss: 5.3379 - val_y1_output_loss: 0.6703 - val_y2_output_loss:
4.5452 - val_y1_output_root_mean_squared_error: 0.8189 -
val_y2_output_root_mean_squared_error: 2.1604
Epoch 233/500
614/614 [=====] - 0s 134us/sample - loss: 1.2598 -
y1_output_loss: 0.2239 - y2_output_loss: 1.0316 -
y1_output_root_mean_squared_error: 0.4720 - y2_output_root_mean_squared_error:
1.0184 - val_loss: 1.5587 - val_y1_output_loss: 0.2817 - val_y2_output_loss:
1.2466 - val_y1_output_root_mean_squared_error: 0.5264 -
val_y2_output_root_mean_squared_error: 1.1321
Epoch 234/500
614/614 [=====] - 0s 128us/sample - loss: 1.2241 -
y1_output_loss: 0.2378 - y2_output_loss: 0.9888 -
y1_output_root_mean_squared_error: 0.4831 - y2_output_root_mean_squared_error:
0.9954 - val_loss: 2.6920 - val_y1_output_loss: 0.8788 - val_y2_output_loss:
1.8286 - val_y1_output_root_mean_squared_error: 0.9453 -
val_y2_output_root_mean_squared_error: 1.3410
Epoch 235/500
614/614 [=====] - 0s 129us/sample - loss: 1.2128 -
y1_output_loss: 0.2673 - y2_output_loss: 0.9525 -
y1_output_root_mean_squared_error: 0.5156 - y2_output_root_mean_squared_error:
0.9731 - val_loss: 2.0289 - val_y1_output_loss: 0.2320 - val_y2_output_loss:
1.7765 - val_y1_output_root_mean_squared_error: 0.4739 -
val_y2_output_root_mean_squared_error: 1.3432
Epoch 236/500

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614/614 [=====] - 0s 135us/sample - loss: 1.1658 -
y1_output_loss: 0.2407 - y2_output_loss: 0.9309 -
y1_output_root_mean_squared_error: 0.4924 - y2_output_root_mean_squared_error:
0.9609 - val_loss: 3.4739 - val_y1_output_loss: 0.3212 - val_y2_output_loss:
3.1190 - val_y1_output_root_mean_squared_error: 0.5476 -
val_y2_output_root_mean_squared_error: 1.7816
Epoch 237/500
614/614 [=====] - 0s 141us/sample - loss: 1.2150 -
y1_output_loss: 0.2998 - y2_output_loss: 0.9050 -
y1_output_root_mean_squared_error: 0.5497 - y2_output_root_mean_squared_error:
0.9554 - val_loss: 1.5398 - val_y1_output_loss: 0.2282 - val_y2_output_loss:
1.2868 - val_y1_output_root_mean_squared_error: 0.4771 -
val_y2_output_root_mean_squared_error: 1.1455
Epoch 238/500
614/614 [=====] - 0s 132us/sample - loss: 1.2534 -
y1_output_loss: 0.2475 - y2_output_loss: 0.9978 -
y1_output_root_mean_squared_error: 0.4994 - y2_output_root_mean_squared_error:
1.0020 - val_loss: 2.7577 - val_y1_output_loss: 0.2152 - val_y2_output_loss:
2.5169 - val_y1_output_root_mean_squared_error: 0.4469 -
val_y2_output_root_mean_squared_error: 1.5994
Epoch 239/500
614/614 [=====] - 0s 131us/sample - loss: 1.0499 -
y1_output_loss: 0.2019 - y2_output_loss: 0.8470 -
y1_output_root_mean_squared_error: 0.4500 - y2_output_root_mean_squared_error:
0.9205 - val_loss: 1.9345 - val_y1_output_loss: 0.3536 - val_y2_output_loss:
1.6029 - val_y1_output_root_mean_squared_error: 0.6034 -
val_y2_output_root_mean_squared_error: 1.2532
Epoch 240/500
614/614 [=====] - 0s 130us/sample - loss: 1.4518 -
y1_output_loss: 0.3049 - y2_output_loss: 1.1336 -
y1_output_root_mean_squared_error: 0.5545 - y2_output_root_mean_squared_error:
1.0697 - val_loss: 1.5508 - val_y1_output_loss: 0.2452 - val_y2_output_loss:
1.2778 - val_y1_output_root_mean_squared_error: 0.4954 -
val_y2_output_root_mean_squared_error: 1.1425
Epoch 241/500
614/614 [=====] - 0s 135us/sample - loss: 1.0934 -
y1_output_loss: 0.1975 - y2_output_loss: 0.8923 -
y1_output_root_mean_squared_error: 0.4452 - y2_output_root_mean_squared_error:
0.9461 - val_loss: 1.4949 - val_y1_output_loss: 0.2375 - val_y2_output_loss:
1.2379 - val_y1_output_root_mean_squared_error: 0.4798 -
val_y2_output_root_mean_squared_error: 1.1246
Epoch 242/500
614/614 [=====] - 0s 132us/sample - loss: 1.3733 -
y1_output_loss: 0.2765 - y2_output_loss: 1.0919 -
y1_output_root_mean_squared_error: 0.5272 - y2_output_root_mean_squared_error:
1.0466 - val_loss: 2.0656 - val_y1_output_loss: 0.2772 - val_y2_output_loss:
1.7493 - val_y1_output_root_mean_squared_error: 0.5343 -
val_y2_output_root_mean_squared_error: 1.3342

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Epoch 243/500

614/614 [=====] - 0s 135us/sample - loss: 1.2951 -  
y1\_output\_loss: 0.2704 - y2\_output\_loss: 1.0173 -  
y1\_output\_root\_mean\_squared\_error: 0.5213 - y2\_output\_root\_mean\_squared\_error:  
1.0116 - val\_loss: 1.8555 - val\_y1\_output\_loss: 0.3385 - val\_y2\_output\_loss:  
1.5070 - val\_y1\_output\_root\_mean\_squared\_error: 0.5647 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.2396

Epoch 244/500

614/614 [=====] - 0s 134us/sample - loss: 1.1298 -  
y1\_output\_loss: 0.2231 - y2\_output\_loss: 0.9007 -  
y1\_output\_root\_mean\_squared\_error: 0.4735 - y2\_output\_root\_mean\_squared\_error:  
0.9516 - val\_loss: 1.4517 - val\_y1\_output\_loss: 0.2401 - val\_y2\_output\_loss:  
1.1887 - val\_y1\_output\_root\_mean\_squared\_error: 0.4938 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0991

Epoch 245/500

614/614 [=====] - 0s 132us/sample - loss: 1.2852 -  
y1\_output\_loss: 0.2225 - y2\_output\_loss: 1.0561 -  
y1\_output\_root\_mean\_squared\_error: 0.4731 - y2\_output\_root\_mean\_squared\_error:  
1.0302 - val\_loss: 2.6657 - val\_y1\_output\_loss: 0.4741 - val\_y2\_output\_loss:  
2.1822 - val\_y1\_output\_root\_mean\_squared\_error: 0.6993 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.4754

Epoch 246/500

614/614 [=====] - 0s 149us/sample - loss: 1.1749 -  
y1\_output\_loss: 0.2585 - y2\_output\_loss: 0.9085 -  
y1\_output\_root\_mean\_squared\_error: 0.5096 - y2\_output\_root\_mean\_squared\_error:  
0.9567 - val\_loss: 1.6310 - val\_y1\_output\_loss: 0.2515 - val\_y2\_output\_loss:  
1.3443 - val\_y1\_output\_root\_mean\_squared\_error: 0.5106 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1706

Epoch 247/500

614/614 [=====] - 0s 155us/sample - loss: 1.4743 -  
y1\_output\_loss: 0.2600 - y2\_output\_loss: 1.2879 -  
y1\_output\_root\_mean\_squared\_error: 0.5110 - y2\_output\_root\_mean\_squared\_error:  
1.1014 - val\_loss: 5.9585 - val\_y1\_output\_loss: 0.9251 - val\_y2\_output\_loss:  
4.8934 - val\_y1\_output\_root\_mean\_squared\_error: 0.9752 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.2378

Epoch 248/500

614/614 [=====] - 0s 134us/sample - loss: 2.8876 -  
y1\_output\_loss: 0.5379 - y2\_output\_loss: 2.3562 -  
y1\_output\_root\_mean\_squared\_error: 0.7269 - y2\_output\_root\_mean\_squared\_error:  
1.5360 - val\_loss: 6.7033 - val\_y1\_output\_loss: 2.2011 - val\_y2\_output\_loss:  
4.3108 - val\_y1\_output\_root\_mean\_squared\_error: 1.5029 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.1082

Epoch 249/500

614/614 [=====] - 0s 136us/sample - loss: 1.5943 -  
y1\_output\_loss: 0.3408 - y2\_output\_loss: 1.2440 -  
y1\_output\_root\_mean\_squared\_error: 0.5845 - y2\_output\_root\_mean\_squared\_error:  
1.1192 - val\_loss: 1.4695 - val\_y1\_output\_loss: 0.2309 - val\_y2\_output\_loss:  
1.2238 - val\_y1\_output\_root\_mean\_squared\_error: 0.4661 -



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val_y2_output_root_mean_squared_error: 1.1190
Epoch 250/500
614/614 [=====] - 0s 143us/sample - loss: 1.2395 -
y1_output_loss: 0.2509 - y2_output_loss: 0.9805 -
y1_output_root_mean_squared_error: 0.5024 - y2_output_root_mean_squared_error:
0.9935 - val_loss: 1.4107 - val_y1_output_loss: 0.2372 - val_y2_output_loss:
1.1544 - val_y1_output_root_mean_squared_error: 0.4935 -
val_y2_output_root_mean_squared_error: 1.0804
Epoch 251/500
614/614 [=====] - 0s 140us/sample - loss: 1.6714 -
y1_output_loss: 0.3366 - y2_output_loss: 1.3337 -
y1_output_root_mean_squared_error: 0.5782 - y2_output_root_mean_squared_error:
1.1564 - val_loss: 2.0152 - val_y1_output_loss: 0.4861 - val_y2_output_loss:
1.5380 - val_y1_output_root_mean_squared_error: 0.7030 -
val_y2_output_root_mean_squared_error: 1.2333
Epoch 252/500
614/614 [=====] - 0s 143us/sample - loss: 1.1676 -
y1_output_loss: 0.2145 - y2_output_loss: 0.9473 -
y1_output_root_mean_squared_error: 0.4637 - y2_output_root_mean_squared_error:
0.9760 - val_loss: 1.5816 - val_y1_output_loss: 0.2525 - val_y2_output_loss:
1.3203 - val_y1_output_root_mean_squared_error: 0.4835 -
val_y2_output_root_mean_squared_error: 1.1610
Epoch 253/500
614/614 [=====] - 0s 137us/sample - loss: 1.2191 -
y1_output_loss: 0.2490 - y2_output_loss: 1.0186 -
y1_output_root_mean_squared_error: 0.4921 - y2_output_root_mean_squared_error:
0.9884 - val_loss: 12.2986 - val_y1_output_loss: 1.8616 - val_y2_output_loss:
10.4293 - val_y1_output_root_mean_squared_error: 1.3426 -
val_y2_output_root_mean_squared_error: 3.2397
Epoch 254/500
614/614 [=====] - 0s 131us/sample - loss: 1.6613 -
y1_output_loss: 0.3462 - y2_output_loss: 1.3179 -
y1_output_root_mean_squared_error: 0.5908 - y2_output_root_mean_squared_error:
1.1455 - val_loss: 2.0947 - val_y1_output_loss: 0.2520 - val_y2_output_loss:
1.8452 - val_y1_output_root_mean_squared_error: 0.4857 -
val_y2_output_root_mean_squared_error: 1.3634
Epoch 255/500
614/614 [=====] - 0s 130us/sample - loss: 1.2363 -
y1_output_loss: 0.2618 - y2_output_loss: 0.9691 -
y1_output_root_mean_squared_error: 0.5130 - y2_output_root_mean_squared_error:
0.9865 - val_loss: 1.7880 - val_y1_output_loss: 0.3951 - val_y2_output_loss:
1.3913 - val_y1_output_root_mean_squared_error: 0.6357 -
val_y2_output_root_mean_squared_error: 1.1764
Epoch 256/500
614/614 [=====] - 0s 156us/sample - loss: 1.6751 -
y1_output_loss: 0.3230 - y2_output_loss: 1.3582 -
y1_output_root_mean_squared_error: 0.5678 - y2_output_root_mean_squared_error:
1.1630 - val_loss: 3.5800 - val_y1_output_loss: 0.3444 - val_y2_output_loss:

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3.1784 - val\_y1\_output\_root\_mean\_squared\_error: 0.5793 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.8012  
 Epoch 257/500  
 614/614 [=====] - 0s 156us/sample - loss: 1.5988 -  
 y1\_output\_loss: 0.3260 - y2\_output\_loss: 1.2593 -  
 y1\_output\_root\_mean\_squared\_error: 0.5732 - y2\_output\_root\_mean\_squared\_error:  
 1.1271 - val\_loss: 1.3937 - val\_y1\_output\_loss: 0.1920 - val\_y2\_output\_loss:  
 1.1700 - val\_y1\_output\_root\_mean\_squared\_error: 0.4396 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0957  
 Epoch 258/500  
 614/614 [=====] - 0s 131us/sample - loss: 1.1752 -  
 y1\_output\_loss: 0.2271 - y2\_output\_loss: 0.9476 -  
 y1\_output\_root\_mean\_squared\_error: 0.4781 - y2\_output\_root\_mean\_squared\_error:  
 0.9730 - val\_loss: 1.5774 - val\_y1\_output\_loss: 0.2575 - val\_y2\_output\_loss:  
 1.2961 - val\_y1\_output\_root\_mean\_squared\_error: 0.5021 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1512  
 Epoch 259/500  
 614/614 [=====] - 0s 133us/sample - loss: 0.9435 -  
 y1\_output\_loss: 0.1950 - y2\_output\_loss: 0.7548 -  
 y1\_output\_root\_mean\_squared\_error: 0.4425 - y2\_output\_root\_mean\_squared\_error:  
 0.8647 - val\_loss: 2.7399 - val\_y1\_output\_loss: 0.3025 - val\_y2\_output\_loss:  
 2.3768 - val\_y1\_output\_root\_mean\_squared\_error: 0.5567 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.5588  
 Epoch 260/500  
 614/614 [=====] - 0s 136us/sample - loss: 1.1517 -  
 y1\_output\_loss: 0.2367 - y2\_output\_loss: 0.9453 -  
 y1\_output\_root\_mean\_squared\_error: 0.4840 - y2\_output\_root\_mean\_squared\_error:  
 0.9579 - val\_loss: 6.0305 - val\_y1\_output\_loss: 0.9669 - val\_y2\_output\_loss:  
 5.1232 - val\_y1\_output\_root\_mean\_squared\_error: 0.9912 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.2468  
 Epoch 261/500  
 614/614 [=====] - 0s 135us/sample - loss: 1.4632 -  
 y1\_output\_loss: 0.2734 - y2\_output\_loss: 1.1838 -  
 y1\_output\_root\_mean\_squared\_error: 0.5214 - y2\_output\_root\_mean\_squared\_error:  
 1.0914 - val\_loss: 1.4595 - val\_y1\_output\_loss: 0.2253 - val\_y2\_output\_loss:  
 1.2159 - val\_y1\_output\_root\_mean\_squared\_error: 0.4658 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1147  
 Epoch 262/500  
 614/614 [=====] - 0s 131us/sample - loss: 1.1767 -  
 y1\_output\_loss: 0.2466 - y2\_output\_loss: 0.9206 -  
 y1\_output\_root\_mean\_squared\_error: 0.4988 - y2\_output\_root\_mean\_squared\_error:  
 0.9632 - val\_loss: 1.5152 - val\_y1\_output\_loss: 0.2457 - val\_y2\_output\_loss:  
 1.2444 - val\_y1\_output\_root\_mean\_squared\_error: 0.4853 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1312  
 Epoch 263/500  
 614/614 [=====] - 0s 130us/sample - loss: 1.1230 -  
 y1\_output\_loss: 0.2010 - y2\_output\_loss: 0.9139 -  
 y1\_output\_root\_mean\_squared\_error: 0.4503 - y2\_output\_root\_mean\_squared\_error:

0.9593 - val\_loss: 1.3078 - val\_y1\_output\_loss: 0.2119 - val\_y2\_output\_loss:  
 1.0705 - val\_y1\_output\_root\_mean\_squared\_error: 0.4593 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0473  
 Epoch 264/500  
 614/614 [=====] - 0s 133us/sample - loss: 1.4397 -  
 y1\_output\_loss: 0.2754 - y2\_output\_loss: 1.1629 -  
 y1\_output\_root\_mean\_squared\_error: 0.5219 - y2\_output\_root\_mean\_squared\_error:  
 1.0804 - val\_loss: 1.4696 - val\_y1\_output\_loss: 0.2486 - val\_y2\_output\_loss:  
 1.2040 - val\_y1\_output\_root\_mean\_squared\_error: 0.4835 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1117  
 Epoch 265/500  
 614/614 [=====] - 0s 137us/sample - loss: 1.3877 -  
 y1\_output\_loss: 0.2878 - y2\_output\_loss: 1.0884 -  
 y1\_output\_root\_mean\_squared\_error: 0.5389 - y2\_output\_root\_mean\_squared\_error:  
 1.0475 - val\_loss: 1.5002 - val\_y1\_output\_loss: 0.2459 - val\_y2\_output\_loss:  
 1.2437 - val\_y1\_output\_root\_mean\_squared\_error: 0.4876 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1236  
 Epoch 266/500  
 614/614 [=====] - 0s 130us/sample - loss: 1.1019 -  
 y1\_output\_loss: 0.2298 - y2\_output\_loss: 0.8724 -  
 y1\_output\_root\_mean\_squared\_error: 0.4816 - y2\_output\_root\_mean\_squared\_error:  
 0.9327 - val\_loss: 1.8682 - val\_y1\_output\_loss: 0.3111 - val\_y2\_output\_loss:  
 1.5699 - val\_y1\_output\_root\_mean\_squared\_error: 0.5341 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2581  
 Epoch 267/500  
 614/614 [=====] - 0s 129us/sample - loss: 1.0427 -  
 y1\_output\_loss: 0.2143 - y2\_output\_loss: 0.8333 -  
 y1\_output\_root\_mean\_squared\_error: 0.4629 - y2\_output\_root\_mean\_squared\_error:  
 0.9102 - val\_loss: 2.3027 - val\_y1\_output\_loss: 0.3047 - val\_y2\_output\_loss:  
 1.9566 - val\_y1\_output\_root\_mean\_squared\_error: 0.5347 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.4201  
 Epoch 268/500  
 614/614 [=====] - 0s 129us/sample - loss: 1.0920 -  
 y1\_output\_loss: 0.1834 - y2\_output\_loss: 0.9089 -  
 y1\_output\_root\_mean\_squared\_error: 0.4290 - y2\_output\_root\_mean\_squared\_error:  
 0.9529 - val\_loss: 1.5450 - val\_y1\_output\_loss: 0.2989 - val\_y2\_output\_loss:  
 1.2227 - val\_y1\_output\_root\_mean\_squared\_error: 0.5425 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1183  
 Epoch 269/500  
 614/614 [=====] - 0s 135us/sample - loss: 1.1304 -  
 y1\_output\_loss: 0.2094 - y2\_output\_loss: 0.9143 -  
 y1\_output\_root\_mean\_squared\_error: 0.4583 - y2\_output\_root\_mean\_squared\_error:  
 0.9593 - val\_loss: 1.9282 - val\_y1\_output\_loss: 0.3371 - val\_y2\_output\_loss:  
 1.5466 - val\_y1\_output\_root\_mean\_squared\_error: 0.5900 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2570  
 Epoch 270/500  
 614/614 [=====] - 0s 134us/sample - loss: 1.0672 -  
 y1\_output\_loss: 0.2126 - y2\_output\_loss: 0.8614 -

y1\_output\_root\_mean\_squared\_error: 0.4629 - y2\_output\_root\_mean\_squared\_error:  
 0.9236 - val\_loss: 1.6792 - val\_y1\_output\_loss: 0.2877 - val\_y2\_output\_loss:  
 1.3645 - val\_y1\_output\_root\_mean\_squared\_error: 0.5284 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1832  
 Epoch 271/500  
 614/614 [=====] - 0s 130us/sample - loss: 1.3799 -  
 y1\_output\_loss: 0.2795 - y2\_output\_loss: 1.0934 -  
 y1\_output\_root\_mean\_squared\_error: 0.5294 - y2\_output\_root\_mean\_squared\_error:  
 1.0486 - val\_loss: 1.4825 - val\_y1\_output\_loss: 0.2417 - val\_y2\_output\_loss:  
 1.2107 - val\_y1\_output\_root\_mean\_squared\_error: 0.4897 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1148  
 Epoch 272/500  
 614/614 [=====] - 0s 130us/sample - loss: 1.0799 -  
 y1\_output\_loss: 0.1924 - y2\_output\_loss: 0.8795 -  
 y1\_output\_root\_mean\_squared\_error: 0.4394 - y2\_output\_root\_mean\_squared\_error:  
 0.9417 - val\_loss: 1.7240 - val\_y1\_output\_loss: 0.1997 - val\_y2\_output\_loss:  
 1.4853 - val\_y1\_output\_root\_mean\_squared\_error: 0.4478 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2343  
 Epoch 273/500  
 614/614 [=====] - 0s 130us/sample - loss: 1.3672 -  
 y1\_output\_loss: 0.2471 - y2\_output\_loss: 1.1103 -  
 y1\_output\_root\_mean\_squared\_error: 0.4973 - y2\_output\_root\_mean\_squared\_error:  
 1.0582 - val\_loss: 1.5170 - val\_y1\_output\_loss: 0.2596 - val\_y2\_output\_loss:  
 1.2357 - val\_y1\_output\_root\_mean\_squared\_error: 0.4927 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1288  
 Epoch 274/500  
 614/614 [=====] - 0s 130us/sample - loss: 1.0280 -  
 y1\_output\_loss: 0.1851 - y2\_output\_loss: 0.8410 -  
 y1\_output\_root\_mean\_squared\_error: 0.4313 - y2\_output\_root\_mean\_squared\_error:  
 0.9176 - val\_loss: 1.4446 - val\_y1\_output\_loss: 0.2537 - val\_y2\_output\_loss:  
 1.1796 - val\_y1\_output\_root\_mean\_squared\_error: 0.4935 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0960  
 Epoch 275/500  
 614/614 [=====] - 0s 130us/sample - loss: 0.9657 -  
 y1\_output\_loss: 0.1992 - y2\_output\_loss: 0.7727 -  
 y1\_output\_root\_mean\_squared\_error: 0.4472 - y2\_output\_root\_mean\_squared\_error:  
 0.8750 - val\_loss: 2.3198 - val\_y1\_output\_loss: 0.3239 - val\_y2\_output\_loss:  
 1.9345 - val\_y1\_output\_root\_mean\_squared\_error: 0.5732 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.4111  
 Epoch 276/500  
 614/614 [=====] - 0s 130us/sample - loss: 2.3727 -  
 y1\_output\_loss: 0.5214 - y2\_output\_loss: 1.8348 -  
 y1\_output\_root\_mean\_squared\_error: 0.7233 - y2\_output\_root\_mean\_squared\_error:  
 1.3600 - val\_loss: 1.3937 - val\_y1\_output\_loss: 0.2583 - val\_y2\_output\_loss:  
 1.1136 - val\_y1\_output\_root\_mean\_squared\_error: 0.5068 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0662  
 Epoch 277/500  
 614/614 [=====] - 0s 129us/sample - loss: 1.0997 -

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y1_output_loss: 0.2125 - y2_output_loss: 0.8779 -
y1_output_root_mean_squared_error: 0.4626 - y2_output_root_mean_squared_error:
0.9411 - val_loss: 1.5138 - val_y1_output_loss: 0.2325 - val_y2_output_loss:
1.2641 - val_y1_output_root_mean_squared_error: 0.4701 -
val_y2_output_root_mean_squared_error: 1.1370
Epoch 278/500
614/614 [=====] - 0s 131us/sample - loss: 0.9775 -
y1_output_loss: 0.2117 - y2_output_loss: 0.7601 -
y1_output_root_mean_squared_error: 0.4618 - y2_output_root_mean_squared_error:
0.8742 - val_loss: 1.6321 - val_y1_output_loss: 0.2640 - val_y2_output_loss:
1.3793 - val_y1_output_root_mean_squared_error: 0.4855 -
val_y2_output_root_mean_squared_error: 1.1817
Epoch 279/500
614/614 [=====] - 0s 131us/sample - loss: 0.9722 -
y1_output_loss: 0.2019 - y2_output_loss: 0.7633 -
y1_output_root_mean_squared_error: 0.4493 - y2_output_root_mean_squared_error:
0.8777 - val_loss: 1.3316 - val_y1_output_loss: 0.2884 - val_y2_output_loss:
1.0116 - val_y1_output_root_mean_squared_error: 0.5445 -
val_y2_output_root_mean_squared_error: 1.0174
Epoch 280/500
614/614 [=====] - 0s 132us/sample - loss: 0.8009 -
y1_output_loss: 0.1714 - y2_output_loss: 0.6362 -
y1_output_root_mean_squared_error: 0.4108 - y2_output_root_mean_squared_error:
0.7951 - val_loss: 1.9717 - val_y1_output_loss: 0.3796 - val_y2_output_loss:
1.6092 - val_y1_output_root_mean_squared_error: 0.5854 -
val_y2_output_root_mean_squared_error: 1.2763
Epoch 281/500
614/614 [=====] - 0s 131us/sample - loss: 1.1095 -
y1_output_loss: 0.2478 - y2_output_loss: 0.8519 -
y1_output_root_mean_squared_error: 0.4995 - y2_output_root_mean_squared_error:
0.9274 - val_loss: 1.2060 - val_y1_output_loss: 0.1904 - val_y2_output_loss:
0.9974 - val_y1_output_root_mean_squared_error: 0.4383 -
val_y2_output_root_mean_squared_error: 1.0069
Epoch 282/500
614/614 [=====] - 0s 132us/sample - loss: 1.0449 -
y1_output_loss: 0.2103 - y2_output_loss: 0.8269 -
y1_output_root_mean_squared_error: 0.4592 - y2_output_root_mean_squared_error:
0.9132 - val_loss: 1.7779 - val_y1_output_loss: 0.2691 - val_y2_output_loss:
1.4780 - val_y1_output_root_mean_squared_error: 0.5085 -
val_y2_output_root_mean_squared_error: 1.2326
Epoch 283/500
614/614 [=====] - 0s 136us/sample - loss: 1.3593 -
y1_output_loss: 0.2655 - y2_output_loss: 1.0828 -
y1_output_root_mean_squared_error: 0.5165 - y2_output_root_mean_squared_error:
1.0452 - val_loss: 1.3400 - val_y1_output_loss: 0.2014 - val_y2_output_loss:
1.1165 - val_y1_output_root_mean_squared_error: 0.4396 -
val_y2_output_root_mean_squared_error: 1.0709
Epoch 284/500

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614/614 [=====] - 0s 135us/sample - loss: 1.1795 -
y1_output_loss: 0.2246 - y2_output_loss: 0.9524 -
y1_output_root_mean_squared_error: 0.4729 - y2_output_root_mean_squared_error:
0.9777 - val_loss: 1.4107 - val_y1_output_loss: 0.2165 - val_y2_output_loss:
1.1778 - val_y1_output_root_mean_squared_error: 0.4575 -
val_y2_output_root_mean_squared_error: 1.0961
Epoch 285/500
614/614 [=====] - 0s 136us/sample - loss: 0.9937 -
y1_output_loss: 0.2039 - y2_output_loss: 0.7887 -
y1_output_root_mean_squared_error: 0.4513 - y2_output_root_mean_squared_error:
0.8888 - val_loss: 2.3241 - val_y1_output_loss: 0.3504 - val_y2_output_loss:
1.9474 - val_y1_output_root_mean_squared_error: 0.5786 -
val_y2_output_root_mean_squared_error: 1.4104
Epoch 286/500
614/614 [=====] - 0s 139us/sample - loss: 0.9134 -
y1_output_loss: 0.1963 - y2_output_loss: 0.7393 -
y1_output_root_mean_squared_error: 0.4430 - y2_output_root_mean_squared_error:
0.8468 - val_loss: 2.0242 - val_y1_output_loss: 0.3813 - val_y2_output_loss:
1.5918 - val_y1_output_root_mean_squared_error: 0.6270 -
val_y2_output_root_mean_squared_error: 1.2771
Epoch 287/500
614/614 [=====] - 0s 133us/sample - loss: 1.2102 -
y1_output_loss: 0.2282 - y2_output_loss: 0.9826 -
y1_output_root_mean_squared_error: 0.4783 - y2_output_root_mean_squared_error:
0.9907 - val_loss: 2.2849 - val_y1_output_loss: 0.3044 - val_y2_output_loss:
1.9289 - val_y1_output_root_mean_squared_error: 0.5611 -
val_y2_output_root_mean_squared_error: 1.4036
Epoch 288/500
614/614 [=====] - 0s 137us/sample - loss: 1.0822 -
y1_output_loss: 0.2092 - y2_output_loss: 0.8631 -
y1_output_root_mean_squared_error: 0.4594 - y2_output_root_mean_squared_error:
0.9333 - val_loss: 1.2649 - val_y1_output_loss: 0.1867 - val_y2_output_loss:
1.0598 - val_y1_output_root_mean_squared_error: 0.4270 -
val_y2_output_root_mean_squared_error: 1.0405
Epoch 289/500
614/614 [=====] - 0s 129us/sample - loss: 1.6565 -
y1_output_loss: 0.2820 - y2_output_loss: 1.3650 -
y1_output_root_mean_squared_error: 0.5320 - y2_output_root_mean_squared_error:
1.1720 - val_loss: 2.1534 - val_y1_output_loss: 0.4333 - val_y2_output_loss:
1.7216 - val_y1_output_root_mean_squared_error: 0.6377 -
val_y2_output_root_mean_squared_error: 1.3216
Epoch 290/500
614/614 [=====] - 0s 131us/sample - loss: 1.3099 -
y1_output_loss: 0.2569 - y2_output_loss: 1.0455 -
y1_output_root_mean_squared_error: 0.5068 - y2_output_root_mean_squared_error:
1.0262 - val_loss: 1.4063 - val_y1_output_loss: 0.2807 - val_y2_output_loss:
1.0929 - val_y1_output_root_mean_squared_error: 0.5345 -
val_y2_output_root_mean_squared_error: 1.0586

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Epoch 291/500  
614/614 [=====] - 0s 139us/sample - loss: 1.2172 -  
y1\_output\_loss: 0.2577 - y2\_output\_loss: 0.9513 -  
y1\_output\_root\_mean\_squared\_error: 0.5084 - y2\_output\_root\_mean\_squared\_error:  
0.9791 - val\_loss: 1.3110 - val\_y1\_output\_loss: 0.2332 - val\_y2\_output\_loss:  
1.0684 - val\_y1\_output\_root\_mean\_squared\_error: 0.4893 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0351  
Epoch 292/500  
614/614 [=====] - 0s 138us/sample - loss: 1.2313 -  
y1\_output\_loss: 0.2373 - y2\_output\_loss: 0.9855 -  
y1\_output\_root\_mean\_squared\_error: 0.4882 - y2\_output\_root\_mean\_squared\_error:  
0.9965 - val\_loss: 1.4793 - val\_y1\_output\_loss: 0.2133 - val\_y2\_output\_loss:  
1.2223 - val\_y1\_output\_root\_mean\_squared\_error: 0.4660 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1234  
Epoch 293/500  
614/614 [=====] - 0s 130us/sample - loss: 0.9162 -  
y1\_output\_loss: 0.1816 - y2\_output\_loss: 0.7359 -  
y1\_output\_root\_mean\_squared\_error: 0.4281 - y2\_output\_root\_mean\_squared\_error:  
0.8561 - val\_loss: 1.4644 - val\_y1\_output\_loss: 0.1928 - val\_y2\_output\_loss:  
1.2651 - val\_y1\_output\_root\_mean\_squared\_error: 0.4412 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1268  
Epoch 294/500  
614/614 [=====] - 0s 133us/sample - loss: 0.9749 -  
y1\_output\_loss: 0.2049 - y2\_output\_loss: 0.7621 -  
y1\_output\_root\_mean\_squared\_error: 0.4534 - y2\_output\_root\_mean\_squared\_error:  
0.8771 - val\_loss: 2.0570 - val\_y1\_output\_loss: 0.3121 - val\_y2\_output\_loss:  
1.6852 - val\_y1\_output\_root\_mean\_squared\_error: 0.5676 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.3171  
Epoch 295/500  
614/614 [=====] - 0s 168us/sample - loss: 0.8753 -  
y1\_output\_loss: 0.1652 - y2\_output\_loss: 0.7229 -  
y1\_output\_root\_mean\_squared\_error: 0.4051 - y2\_output\_root\_mean\_squared\_error:  
0.8433 - val\_loss: 4.4372 - val\_y1\_output\_loss: 0.6700 - val\_y2\_output\_loss:  
3.7039 - val\_y1\_output\_root\_mean\_squared\_error: 0.8337 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.9345  
Epoch 296/500  
614/614 [=====] - 0s 177us/sample - loss: 1.0176 -  
y1\_output\_loss: 0.1906 - y2\_output\_loss: 0.8203 -  
y1\_output\_root\_mean\_squared\_error: 0.4376 - y2\_output\_root\_mean\_squared\_error:  
0.9089 - val\_loss: 1.3982 - val\_y1\_output\_loss: 0.2458 - val\_y2\_output\_loss:  
1.1313 - val\_y1\_output\_root\_mean\_squared\_error: 0.4879 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0771  
Epoch 297/500  
614/614 [=====] - 0s 171us/sample - loss: 1.1522 -  
y1\_output\_loss: 0.1994 - y2\_output\_loss: 0.9465 -  
y1\_output\_root\_mean\_squared\_error: 0.4481 - y2\_output\_root\_mean\_squared\_error:  
0.9754 - val\_loss: 1.7181 - val\_y1\_output\_loss: 0.2421 - val\_y2\_output\_loss:  
1.4344 - val\_y1\_output\_root\_mean\_squared\_error: 0.4909 -

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val_y2_output_root_mean_squared_error: 1.2154
Epoch 298/500
614/614 [=====] - 0s 154us/sample - loss: 0.9391 -
y1_output_loss: 0.1684 - y2_output_loss: 0.7748 -
y1_output_root_mean_squared_error: 0.4106 - y2_output_root_mean_squared_error:
0.8778 - val_loss: 2.5393 - val_y1_output_loss: 0.4118 - val_y2_output_loss:
2.1217 - val_y1_output_root_mean_squared_error: 0.6254 -
val_y2_output_root_mean_squared_error: 1.4657
Epoch 299/500
614/614 [=====] - 0s 160us/sample - loss: 0.9167 -
y1_output_loss: 0.1965 - y2_output_loss: 0.7147 -
y1_output_root_mean_squared_error: 0.4435 - y2_output_root_mean_squared_error:
0.8485 - val_loss: 1.3921 - val_y1_output_loss: 0.2533 - val_y2_output_loss:
1.1174 - val_y1_output_root_mean_squared_error: 0.5048 -
val_y2_output_root_mean_squared_error: 1.0664
Epoch 300/500
614/614 [=====] - 0s 154us/sample - loss: 0.8920 -
y1_output_loss: 0.1833 - y2_output_loss: 0.7019 -
y1_output_root_mean_squared_error: 0.4297 - y2_output_root_mean_squared_error:
0.8410 - val_loss: 2.9161 - val_y1_output_loss: 0.2585 - val_y2_output_loss:
2.6185 - val_y1_output_root_mean_squared_error: 0.4983 -
val_y2_output_root_mean_squared_error: 1.6334
Epoch 301/500
614/614 [=====] - 0s 160us/sample - loss: 0.8415 -
y1_output_loss: 0.1729 - y2_output_loss: 0.6690 -
y1_output_root_mean_squared_error: 0.4169 - y2_output_root_mean_squared_error:
0.8171 - val_loss: 1.6202 - val_y1_output_loss: 0.1980 - val_y2_output_loss:
1.3959 - val_y1_output_root_mean_squared_error: 0.4462 -
val_y2_output_root_mean_squared_error: 1.1921
Epoch 302/500
614/614 [=====] - 0s 179us/sample - loss: 0.8489 -
y1_output_loss: 0.1924 - y2_output_loss: 0.6555 -
y1_output_root_mean_squared_error: 0.4393 - y2_output_root_mean_squared_error:
0.8099 - val_loss: 1.5063 - val_y1_output_loss: 0.2148 - val_y2_output_loss:
1.2821 - val_y1_output_root_mean_squared_error: 0.4565 -
val_y2_output_root_mean_squared_error: 1.1393
Epoch 303/500
614/614 [=====] - 0s 182us/sample - loss: 0.9125 -
y1_output_loss: 0.1866 - y2_output_loss: 0.7278 -
y1_output_root_mean_squared_error: 0.4332 - y2_output_root_mean_squared_error:
0.8514 - val_loss: 1.6373 - val_y1_output_loss: 0.2609 - val_y2_output_loss:
1.3314 - val_y1_output_root_mean_squared_error: 0.5172 -
val_y2_output_root_mean_squared_error: 1.1704
Epoch 304/500
614/614 [=====] - 0s 235us/sample - loss: 1.0777 -
y1_output_loss: 0.1952 - y2_output_loss: 0.8815 -
y1_output_root_mean_squared_error: 0.4413 - y2_output_root_mean_squared_error:
0.9396 - val_loss: 2.6585 - val_y1_output_loss: 0.2609 - val_y2_output_loss:

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2.3680 - val\_y1\_output\_root\_mean\_squared\_error: 0.4962 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.5532  
 Epoch 305/500  
 614/614 [=====] - 0s 182us/sample - loss: 0.9378 -  
 y1\_output\_loss: 0.1821 - y2\_output\_loss: 0.7537 -  
 y1\_output\_root\_mean\_squared\_error: 0.4280 - y2\_output\_root\_mean\_squared\_error:  
 0.8687 - val\_loss: 2.2151 - val\_y1\_output\_loss: 0.3553 - val\_y2\_output\_loss:  
 1.8690 - val\_y1\_output\_root\_mean\_squared\_error: 0.6064 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.3592  
 Epoch 306/500  
 614/614 [=====] - 0s 181us/sample - loss: 1.0032 -  
 y1\_output\_loss: 0.1949 - y2\_output\_loss: 0.8051 -  
 y1\_output\_root\_mean\_squared\_error: 0.4432 - y2\_output\_root\_mean\_squared\_error:  
 0.8982 - val\_loss: 1.2677 - val\_y1\_output\_loss: 0.2052 - val\_y2\_output\_loss:  
 1.0352 - val\_y1\_output\_root\_mean\_squared\_error: 0.4567 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0291  
 Epoch 307/500  
 614/614 [=====] - 0s 182us/sample - loss: 1.0938 -  
 y1\_output\_loss: 0.2187 - y2\_output\_loss: 0.8762 -  
 y1\_output\_root\_mean\_squared\_error: 0.4692 - y2\_output\_root\_mean\_squared\_error:  
 0.9347 - val\_loss: 1.6308 - val\_y1\_output\_loss: 0.2349 - val\_y2\_output\_loss:  
 1.3696 - val\_y1\_output\_root\_mean\_squared\_error: 0.4758 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1851  
 Epoch 308/500  
 614/614 [=====] - 0s 183us/sample - loss: 1.2766 -  
 y1\_output\_loss: 0.3044 - y2\_output\_loss: 0.9613 -  
 y1\_output\_root\_mean\_squared\_error: 0.5541 - y2\_output\_root\_mean\_squared\_error:  
 0.9847 - val\_loss: 1.3379 - val\_y1\_output\_loss: 0.2156 - val\_y2\_output\_loss:  
 1.1088 - val\_y1\_output\_root\_mean\_squared\_error: 0.4550 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0634  
 Epoch 309/500  
 614/614 [=====] - 0s 237us/sample - loss: 0.8939 -  
 y1\_output\_loss: 0.1688 - y2\_output\_loss: 0.7176 -  
 y1\_output\_root\_mean\_squared\_error: 0.4126 - y2\_output\_root\_mean\_squared\_error:  
 0.8507 - val\_loss: 1.2694 - val\_y1\_output\_loss: 0.2204 - val\_y2\_output\_loss:  
 1.0340 - val\_y1\_output\_root\_mean\_squared\_error: 0.4761 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0212  
 Epoch 310/500  
 614/614 [=====] - 0s 191us/sample - loss: 0.9010 -  
 y1\_output\_loss: 0.1871 - y2\_output\_loss: 0.7205 -  
 y1\_output\_root\_mean\_squared\_error: 0.4337 - y2\_output\_root\_mean\_squared\_error:  
 0.8444 - val\_loss: 2.4908 - val\_y1\_output\_loss: 0.3461 - val\_y2\_output\_loss:  
 2.1608 - val\_y1\_output\_root\_mean\_squared\_error: 0.5562 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.4770  
 Epoch 311/500  
 614/614 [=====] - 0s 176us/sample - loss: 0.9781 -  
 y1\_output\_loss: 0.1877 - y2\_output\_loss: 0.7823 -  
 y1\_output\_root\_mean\_squared\_error: 0.4345 - y2\_output\_root\_mean\_squared\_error:

0.8884 - val\_loss: 1.8608 - val\_y1\_output\_loss: 0.2489 - val\_y2\_output\_loss:  
 1.5930 - val\_y1\_output\_root\_mean\_squared\_error: 0.4837 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2755  
 Epoch 312/500  
 614/614 [=====] - 0s 280us/sample - loss: 0.9933 -  
 y1\_output\_loss: 0.1947 - y2\_output\_loss: 0.7904 -  
 y1\_output\_root\_mean\_squared\_error: 0.4427 - y2\_output\_root\_mean\_squared\_error:  
 0.8930 - val\_loss: 1.4439 - val\_y1\_output\_loss: 0.2190 - val\_y2\_output\_loss:  
 1.2003 - val\_y1\_output\_root\_mean\_squared\_error: 0.4721 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1050  
 Epoch 313/500  
 614/614 [=====] - 0s 195us/sample - loss: 0.7730 -  
 y1\_output\_loss: 0.1822 - y2\_output\_loss: 0.5915 -  
 y1\_output\_root\_mean\_squared\_error: 0.4274 - y2\_output\_root\_mean\_squared\_error:  
 0.7683 - val\_loss: 1.5323 - val\_y1\_output\_loss: 0.2103 - val\_y2\_output\_loss:  
 1.3037 - val\_y1\_output\_root\_mean\_squared\_error: 0.4413 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1565  
 Epoch 314/500  
 614/614 [=====] - 0s 194us/sample - loss: 0.8728 -  
 y1\_output\_loss: 0.1904 - y2\_output\_loss: 0.6776 -  
 y1\_output\_root\_mean\_squared\_error: 0.4365 - y2\_output\_root\_mean\_squared\_error:  
 0.8260 - val\_loss: 1.8974 - val\_y1\_output\_loss: 0.3852 - val\_y2\_output\_loss:  
 1.5142 - val\_y1\_output\_root\_mean\_squared\_error: 0.5979 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2409  
 Epoch 315/500  
 614/614 [=====] - 0s 189us/sample - loss: 0.7847 -  
 y1\_output\_loss: 0.1779 - y2\_output\_loss: 0.6148 -  
 y1\_output\_root\_mean\_squared\_error: 0.4202 - y2\_output\_root\_mean\_squared\_error:  
 0.7799 - val\_loss: 1.2755 - val\_y1\_output\_loss: 0.2282 - val\_y2\_output\_loss:  
 1.0324 - val\_y1\_output\_root\_mean\_squared\_error: 0.4656 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0289  
 Epoch 316/500  
 614/614 [=====] - 0s 175us/sample - loss: 1.4851 -  
 y1\_output\_loss: 0.2983 - y2\_output\_loss: 1.1861 -  
 y1\_output\_root\_mean\_squared\_error: 0.5482 - y2\_output\_root\_mean\_squared\_error:  
 1.0884 - val\_loss: 1.2958 - val\_y1\_output\_loss: 0.2017 - val\_y2\_output\_loss:  
 1.0641 - val\_y1\_output\_root\_mean\_squared\_error: 0.4557 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0431  
 Epoch 317/500  
 614/614 [=====] - 0s 183us/sample - loss: 1.6221 -  
 y1\_output\_loss: 0.3166 - y2\_output\_loss: 1.2931 -  
 y1\_output\_root\_mean\_squared\_error: 0.5644 - y2\_output\_root\_mean\_squared\_error:  
 1.1417 - val\_loss: 1.3178 - val\_y1\_output\_loss: 0.3040 - val\_y2\_output\_loss:  
 0.9831 - val\_y1\_output\_root\_mean\_squared\_error: 0.5587 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0028  
 Epoch 318/500  
 614/614 [=====] - 0s 178us/sample - loss: 0.9394 -  
 y1\_output\_loss: 0.1901 - y2\_output\_loss: 0.7441 -

y1\_output\_root\_mean\_squared\_error: 0.4376 - y2\_output\_root\_mean\_squared\_error:  
0.8648 - val\_loss: 1.3251 - val\_y1\_output\_loss: 0.1998 - val\_y2\_output\_loss:  
1.0958 - val\_y1\_output\_root\_mean\_squared\_error: 0.4485 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0601  
Epoch 319/500  
614/614 [=====] - 0s 183us/sample - loss: 0.7523 -  
y1\_output\_loss: 0.1648 - y2\_output\_loss: 0.5815 -  
y1\_output\_root\_mean\_squared\_error: 0.4068 - y2\_output\_root\_mean\_squared\_error:  
0.7661 - val\_loss: 1.2678 - val\_y1\_output\_loss: 0.1921 - val\_y2\_output\_loss:  
1.0512 - val\_y1\_output\_root\_mean\_squared\_error: 0.4417 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0357  
Epoch 320/500  
614/614 [=====] - 0s 181us/sample - loss: 0.8372 -  
y1\_output\_loss: 0.1642 - y2\_output\_loss: 0.6662 -  
y1\_output\_root\_mean\_squared\_error: 0.4060 - y2\_output\_root\_mean\_squared\_error:  
0.8200 - val\_loss: 1.4383 - val\_y1\_output\_loss: 0.2701 - val\_y2\_output\_loss:  
1.1401 - val\_y1\_output\_root\_mean\_squared\_error: 0.5162 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0825  
Epoch 321/500  
614/614 [=====] - 0s 174us/sample - loss: 0.9025 -  
y1\_output\_loss: 0.2021 - y2\_output\_loss: 0.6960 -  
y1\_output\_root\_mean\_squared\_error: 0.4490 - y2\_output\_root\_mean\_squared\_error:  
0.8372 - val\_loss: 1.4351 - val\_y1\_output\_loss: 0.2103 - val\_y2\_output\_loss:  
1.1867 - val\_y1\_output\_root\_mean\_squared\_error: 0.4597 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1062  
Epoch 322/500  
614/614 [=====] - 0s 172us/sample - loss: 1.1945 -  
y1\_output\_loss: 0.2285 - y2\_output\_loss: 1.0473 -  
y1\_output\_root\_mean\_squared\_error: 0.4702 - y2\_output\_root\_mean\_squared\_error:  
0.9866 - val\_loss: 15.1259 - val\_y1\_output\_loss: 1.6556 - val\_y2\_output\_loss:  
13.7307 - val\_y1\_output\_root\_mean\_squared\_error: 1.2346 -  
val\_y2\_output\_root\_mean\_squared\_error: 3.6880  
Epoch 323/500  
614/614 [=====] - 0s 235us/sample - loss: 1.8541 -  
y1\_output\_loss: 0.3968 - y2\_output\_loss: 1.4768 -  
y1\_output\_root\_mean\_squared\_error: 0.6219 - y2\_output\_root\_mean\_squared\_error:  
1.2113 - val\_loss: 8.7353 - val\_y1\_output\_loss: 2.8761 - val\_y2\_output\_loss:  
6.2801 - val\_y1\_output\_root\_mean\_squared\_error: 1.6313 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.4646  
Epoch 324/500  
614/614 [=====] - 0s 183us/sample - loss: 1.1668 -  
y1\_output\_loss: 0.2675 - y2\_output\_loss: 0.9009 -  
y1\_output\_root\_mean\_squared\_error: 0.5182 - y2\_output\_root\_mean\_squared\_error:  
0.9478 - val\_loss: 3.3691 - val\_y1\_output\_loss: 0.7455 - val\_y2\_output\_loss:  
2.5710 - val\_y1\_output\_root\_mean\_squared\_error: 0.8784 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.6117  
Epoch 325/500  
614/614 [=====] - 0s 181us/sample - loss: 0.8219 -

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y1_output_loss: 0.1853 - y2_output_loss: 0.6316 -
y1_output_root_mean_squared_error: 0.4320 - y2_output_root_mean_squared_error:
0.7971 - val_loss: 1.4852 - val_y1_output_loss: 0.2003 - val_y2_output_loss:
1.2516 - val_y1_output_root_mean_squared_error: 0.4437 -
val_y2_output_root_mean_squared_error: 1.1350
Epoch 326/500
614/614 [=====] - 0s 181us/sample - loss: 0.7309 -
y1_output_loss: 0.1557 - y2_output_loss: 0.5848 -
y1_output_root_mean_squared_error: 0.3885 - y2_output_root_mean_squared_error:
0.7615 - val_loss: 3.2575 - val_y1_output_loss: 0.1695 - val_y2_output_loss:
3.0120 - val_y1_output_root_mean_squared_error: 0.4112 -
val_y2_output_root_mean_squared_error: 1.7574
Epoch 327/500
614/614 [=====] - 0s 180us/sample - loss: 0.7378 -
y1_output_loss: 0.1774 - y2_output_loss: 0.5614 -
y1_output_root_mean_squared_error: 0.4210 - y2_output_root_mean_squared_error:
0.7487 - val_loss: 1.3988 - val_y1_output_loss: 0.2404 - val_y2_output_loss:
1.1327 - val_y1_output_root_mean_squared_error: 0.4928 -
val_y2_output_root_mean_squared_error: 1.0752
Epoch 328/500
614/614 [=====] - 0s 282us/sample - loss: 0.7906 -
y1_output_loss: 0.1818 - y2_output_loss: 0.6062 -
y1_output_root_mean_squared_error: 0.4281 - y2_output_root_mean_squared_error:
0.7793 - val_loss: 1.3972 - val_y1_output_loss: 0.1899 - val_y2_output_loss:
1.1736 - val_y1_output_root_mean_squared_error: 0.4329 -
val_y2_output_root_mean_squared_error: 1.0999
Epoch 329/500
614/614 [=====] - 0s 194us/sample - loss: 1.8348 -
y1_output_loss: 0.4069 - y2_output_loss: 1.4177 -
y1_output_root_mean_squared_error: 0.6405 - y2_output_root_mean_squared_error:
1.1935 - val_loss: 2.4541 - val_y1_output_loss: 0.2242 - val_y2_output_loss:
2.1686 - val_y1_output_root_mean_squared_error: 0.4752 -
val_y2_output_root_mean_squared_error: 1.4927
Epoch 330/500
614/614 [=====] - 0s 262us/sample - loss: 0.8562 -
y1_output_loss: 0.1613 - y2_output_loss: 0.6922 -
y1_output_root_mean_squared_error: 0.4000 - y2_output_root_mean_squared_error:
0.8344 - val_loss: 1.3285 - val_y1_output_loss: 0.1849 - val_y2_output_loss:
1.1213 - val_y1_output_root_mean_squared_error: 0.4255 -
val_y2_output_root_mean_squared_error: 1.0712
Epoch 331/500
614/614 [=====] - 0s 187us/sample - loss: 0.8897 -
y1_output_loss: 0.1683 - y2_output_loss: 0.7357 -
y1_output_root_mean_squared_error: 0.4114 - y2_output_root_mean_squared_error:
0.8488 - val_loss: 1.5510 - val_y1_output_loss: 0.2240 - val_y2_output_loss:
1.2904 - val_y1_output_root_mean_squared_error: 0.4761 -
val_y2_output_root_mean_squared_error: 1.1508
Epoch 332/500

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614/614 [=====] - 0s 180us/sample - loss: 0.8377 -
y1_output_loss: 0.1981 - y2_output_loss: 0.6520 -
y1_output_root_mean_squared_error: 0.4264 - y2_output_root_mean_squared_error:
0.8099 - val_loss: 2.1114 - val_y1_output_loss: 0.3955 - val_y2_output_loss:
1.7311 - val_y1_output_root_mean_squared_error: 0.6086 -
val_y2_output_root_mean_squared_error: 1.3195
Epoch 333/500
614/614 [=====] - 0s 177us/sample - loss: 0.7956 -
y1_output_loss: 0.1761 - y2_output_loss: 0.6206 -
y1_output_root_mean_squared_error: 0.4202 - y2_output_root_mean_squared_error:
0.7868 - val_loss: 1.9145 - val_y1_output_loss: 0.1731 - val_y2_output_loss:
1.7133 - val_y1_output_root_mean_squared_error: 0.4187 -
val_y2_output_root_mean_squared_error: 1.3188
Epoch 334/500
614/614 [=====] - 0s 178us/sample - loss: 0.8367 -
y1_output_loss: 0.1592 - y2_output_loss: 0.6723 -
y1_output_root_mean_squared_error: 0.4000 - y2_output_root_mean_squared_error:
0.8226 - val_loss: 2.0394 - val_y1_output_loss: 0.3217 - val_y2_output_loss:
1.7365 - val_y1_output_root_mean_squared_error: 0.5396 -
val_y2_output_root_mean_squared_error: 1.3222
Epoch 335/500
614/614 [=====] - 0s 179us/sample - loss: 0.6880 -
y1_output_loss: 0.1525 - y2_output_loss: 0.5323 -
y1_output_root_mean_squared_error: 0.3902 - y2_output_root_mean_squared_error:
0.7319 - val_loss: 1.3051 - val_y1_output_loss: 0.2102 - val_y2_output_loss:
1.0637 - val_y1_output_root_mean_squared_error: 0.4598 -
val_y2_output_root_mean_squared_error: 1.0458
Epoch 336/500
614/614 [=====] - 0s 231us/sample - loss: 0.8517 -
y1_output_loss: 0.1652 - y2_output_loss: 0.7010 -
y1_output_root_mean_squared_error: 0.3939 - y2_output_root_mean_squared_error:
0.8346 - val_loss: 3.2860 - val_y1_output_loss: 0.5956 - val_y2_output_loss:
2.7330 - val_y1_output_root_mean_squared_error: 0.7454 -
val_y2_output_root_mean_squared_error: 1.6524
Epoch 337/500
614/614 [=====] - 0s 183us/sample - loss: 0.9986 -
y1_output_loss: 0.2056 - y2_output_loss: 0.7916 -
y1_output_root_mean_squared_error: 0.4543 - y2_output_root_mean_squared_error:
0.8900 - val_loss: 1.8002 - val_y1_output_loss: 0.2272 - val_y2_output_loss:
1.5491 - val_y1_output_root_mean_squared_error: 0.4834 -
val_y2_output_root_mean_squared_error: 1.2516
Epoch 338/500
614/614 [=====] - 0s 179us/sample - loss: 0.7783 -
y1_output_loss: 0.1611 - y2_output_loss: 0.6119 -
y1_output_root_mean_squared_error: 0.4023 - y2_output_root_mean_squared_error:
0.7851 - val_loss: 1.2362 - val_y1_output_loss: 0.2435 - val_y2_output_loss:
0.9790 - val_y1_output_root_mean_squared_error: 0.4853 -
val_y2_output_root_mean_squared_error: 1.0003

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Epoch 339/500

614/614 [=====] - 0s 180us/sample - loss: 0.7084 -  
y1\_output\_loss: 0.1698 - y2\_output\_loss: 0.5462 -  
y1\_output\_root\_mean\_squared\_error: 0.4011 - y2\_output\_root\_mean\_squared\_error:  
0.7400 - val\_loss: 1.2563 - val\_y1\_output\_loss: 0.3207 - val\_y2\_output\_loss:  
0.9254 - val\_y1\_output\_root\_mean\_squared\_error: 0.5565 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9729

Epoch 340/500

614/614 [=====] - 0s 186us/sample - loss: 0.6956 -  
y1\_output\_loss: 0.1642 - y2\_output\_loss: 0.5361 -  
y1\_output\_root\_mean\_squared\_error: 0.4006 - y2\_output\_root\_mean\_squared\_error:  
0.7315 - val\_loss: 1.4484 - val\_y1\_output\_loss: 0.2925 - val\_y2\_output\_loss:  
1.1508 - val\_y1\_output\_root\_mean\_squared\_error: 0.5154 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0876

Epoch 341/500

614/614 [=====] - 0s 181us/sample - loss: 0.9616 -  
y1\_output\_loss: 0.2339 - y2\_output\_loss: 0.7380 -  
y1\_output\_root\_mean\_squared\_error: 0.4822 - y2\_output\_root\_mean\_squared\_error:  
0.8538 - val\_loss: 1.3471 - val\_y1\_output\_loss: 0.2361 - val\_y2\_output\_loss:  
1.0947 - val\_y1\_output\_root\_mean\_squared\_error: 0.4897 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0523

Epoch 342/500

614/614 [=====] - 0s 228us/sample - loss: 0.7441 -  
y1\_output\_loss: 0.1647 - y2\_output\_loss: 0.5800 -  
y1\_output\_root\_mean\_squared\_error: 0.4070 - y2\_output\_root\_mean\_squared\_error:  
0.7605 - val\_loss: 1.1738 - val\_y1\_output\_loss: 0.1994 - val\_y2\_output\_loss:  
0.9559 - val\_y1\_output\_root\_mean\_squared\_error: 0.4520 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9846

Epoch 343/500

614/614 [=====] - 0s 220us/sample - loss: 0.6870 -  
y1\_output\_loss: 0.1546 - y2\_output\_loss: 0.5263 -  
y1\_output\_root\_mean\_squared\_error: 0.3946 - y2\_output\_root\_mean\_squared\_error:  
0.7289 - val\_loss: 1.1253 - val\_y1\_output\_loss: 0.1897 - val\_y2\_output\_loss:  
0.9122 - val\_y1\_output\_root\_mean\_squared\_error: 0.4352 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9674

Epoch 344/500

614/614 [=====] - 0s 258us/sample - loss: 0.7073 -  
y1\_output\_loss: 0.1643 - y2\_output\_loss: 0.5385 -  
y1\_output\_root\_mean\_squared\_error: 0.4072 - y2\_output\_root\_mean\_squared\_error:  
0.7359 - val\_loss: 1.4895 - val\_y1\_output\_loss: 0.2242 - val\_y2\_output\_loss:  
1.2385 - val\_y1\_output\_root\_mean\_squared\_error: 0.4648 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1285

Epoch 345/500

614/614 [=====] - 0s 200us/sample - loss: 0.8248 -  
y1\_output\_loss: 0.1737 - y2\_output\_loss: 0.6467 -  
y1\_output\_root\_mean\_squared\_error: 0.4176 - y2\_output\_root\_mean\_squared\_error:  
0.8065 - val\_loss: 1.5850 - val\_y1\_output\_loss: 0.2146 - val\_y2\_output\_loss:  
1.3577 - val\_y1\_output\_root\_mean\_squared\_error: 0.4459 -

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val_y2_output_root_mean_squared_error: 1.1773
Epoch 346/500
614/614 [=====] - 0s 191us/sample - loss: 0.8772 -
y1_output_loss: 0.1841 - y2_output_loss: 0.6915 -
y1_output_root_mean_squared_error: 0.4280 - y2_output_root_mean_squared_error:
0.8331 - val_loss: 1.5543 - val_y1_output_loss: 0.3852 - val_y2_output_loss:
1.1292 - val_y1_output_root_mean_squared_error: 0.6310 -
val_y2_output_root_mean_squared_error: 1.0752
Epoch 347/500
614/614 [=====] - 0s 176us/sample - loss: 0.9202 -
y1_output_loss: 0.1810 - y2_output_loss: 0.7330 -
y1_output_root_mean_squared_error: 0.4257 - y2_output_root_mean_squared_error:
0.8597 - val_loss: 1.6395 - val_y1_output_loss: 0.2810 - val_y2_output_loss:
1.3297 - val_y1_output_root_mean_squared_error: 0.5296 -
val_y2_output_root_mean_squared_error: 1.1657
Epoch 348/500
614/614 [=====] - 0s 180us/sample - loss: 0.9160 -
y1_output_loss: 0.1909 - y2_output_loss: 0.7191 -
y1_output_root_mean_squared_error: 0.4384 - y2_output_root_mean_squared_error:
0.8508 - val_loss: 1.6466 - val_y1_output_loss: 0.2064 - val_y2_output_loss:
1.4166 - val_y1_output_root_mean_squared_error: 0.4478 -
val_y2_output_root_mean_squared_error: 1.2025
Epoch 349/500
614/614 [=====] - 0s 223us/sample - loss: 0.7634 -
y1_output_loss: 0.1735 - y2_output_loss: 0.5845 -
y1_output_root_mean_squared_error: 0.4177 - y2_output_root_mean_squared_error:
0.7674 - val_loss: 1.8744 - val_y1_output_loss: 0.3120 - val_y2_output_loss:
1.5316 - val_y1_output_root_mean_squared_error: 0.5646 -
val_y2_output_root_mean_squared_error: 1.2473
Epoch 350/500
614/614 [=====] - 0s 136us/sample - loss: 0.7740 -
y1_output_loss: 0.1802 - y2_output_loss: 0.5879 -
y1_output_root_mean_squared_error: 0.4258 - y2_output_root_mean_squared_error:
0.7699 - val_loss: 1.6650 - val_y1_output_loss: 0.2283 - val_y2_output_loss:
1.4061 - val_y1_output_root_mean_squared_error: 0.4659 -
val_y2_output_root_mean_squared_error: 1.2033
Epoch 351/500
614/614 [=====] - 0s 140us/sample - loss: 0.7228 -
y1_output_loss: 0.1462 - y2_output_loss: 0.5739 -
y1_output_root_mean_squared_error: 0.3837 - y2_output_root_mean_squared_error:
0.7586 - val_loss: 1.3080 - val_y1_output_loss: 0.1949 - val_y2_output_loss:
1.0898 - val_y1_output_root_mean_squared_error: 0.4369 -
val_y2_output_root_mean_squared_error: 1.0569
Epoch 352/500
614/614 [=====] - 0s 136us/sample - loss: 0.8493 -
y1_output_loss: 0.1721 - y2_output_loss: 0.6725 -
y1_output_root_mean_squared_error: 0.4157 - y2_output_root_mean_squared_error:
0.8225 - val_loss: 1.4143 - val_y1_output_loss: 0.1988 - val_y2_output_loss:

```

1.2050 - val\_y1\_output\_root\_mean\_squared\_error: 0.4326 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1078  
 Epoch 353/500  
 614/614 [=====] - 0s 128us/sample - loss: 0.6229 -  
 y1\_output\_loss: 0.1390 - y2\_output\_loss: 0.4802 -  
 y1\_output\_root\_mean\_squared\_error: 0.3743 - y2\_output\_root\_mean\_squared\_error:  
 0.6948 - val\_loss: 1.3267 - val\_y1\_output\_loss: 0.1785 - val\_y2\_output\_loss:  
 1.1241 - val\_y1\_output\_root\_mean\_squared\_error: 0.4204 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0723  
 Epoch 354/500  
 614/614 [=====] - 0s 128us/sample - loss: 0.7642 -  
 y1\_output\_loss: 0.1981 - y2\_output\_loss: 0.5636 -  
 y1\_output\_root\_mean\_squared\_error: 0.4452 - y2\_output\_root\_mean\_squared\_error:  
 0.7523 - val\_loss: 1.8178 - val\_y1\_output\_loss: 0.3312 - val\_y2\_output\_loss:  
 1.4866 - val\_y1\_output\_root\_mean\_squared\_error: 0.5563 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2281  
 Epoch 355/500  
 614/614 [=====] - 0s 130us/sample - loss: 1.0602 -  
 y1\_output\_loss: 0.2094 - y2\_output\_loss: 0.8451 -  
 y1\_output\_root\_mean\_squared\_error: 0.4583 - y2\_output\_root\_mean\_squared\_error:  
 0.9221 - val\_loss: 1.3067 - val\_y1\_output\_loss: 0.1925 - val\_y2\_output\_loss:  
 1.0910 - val\_y1\_output\_root\_mean\_squared\_error: 0.4289 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0596  
 Epoch 356/500  
 614/614 [=====] - 0s 130us/sample - loss: 0.6092 -  
 y1\_output\_loss: 0.1519 - y2\_output\_loss: 0.4875 -  
 y1\_output\_root\_mean\_squared\_error: 0.3867 - y2\_output\_root\_mean\_squared\_error:  
 0.6780 - val\_loss: 4.0941 - val\_y1\_output\_loss: 0.4214 - val\_y2\_output\_loss:  
 3.5926 - val\_y1\_output\_root\_mean\_squared\_error: 0.6613 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.9123  
 Epoch 357/500  
 614/614 [=====] - 0s 130us/sample - loss: 1.2173 -  
 y1\_output\_loss: 0.2243 - y2\_output\_loss: 0.9853 -  
 y1\_output\_root\_mean\_squared\_error: 0.4752 - y2\_output\_root\_mean\_squared\_error:  
 0.9957 - val\_loss: 1.4542 - val\_y1\_output\_loss: 0.1905 - val\_y2\_output\_loss:  
 1.2488 - val\_y1\_output\_root\_mean\_squared\_error: 0.4400 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1228  
 Epoch 358/500  
 614/614 [=====] - 0s 130us/sample - loss: 0.8164 -  
 y1\_output\_loss: 0.1572 - y2\_output\_loss: 0.6739 -  
 y1\_output\_root\_mean\_squared\_error: 0.3946 - y2\_output\_root\_mean\_squared\_error:  
 0.8128 - val\_loss: 5.7340 - val\_y1\_output\_loss: 0.8103 - val\_y2\_output\_loss:  
 4.7911 - val\_y1\_output\_root\_mean\_squared\_error: 0.9077 -  
 val\_y2\_output\_root\_mean\_squared\_error: 2.2159  
 Epoch 359/500  
 614/614 [=====] - 0s 135us/sample - loss: 0.7923 -  
 y1\_output\_loss: 0.1714 - y2\_output\_loss: 0.6204 -  
 y1\_output\_root\_mean\_squared\_error: 0.4134 - y2\_output\_root\_mean\_squared\_error:



0.7883 - val\_loss: 1.9809 - val\_y1\_output\_loss: 0.4404 - val\_y2\_output\_loss:  
 1.5347 - val\_y1\_output\_root\_mean\_squared\_error: 0.6471 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2498  
 Epoch 360/500  
 614/614 [=====] - 0s 129us/sample - loss: 0.7472 -  
 y1\_output\_loss: 0.1796 - y2\_output\_loss: 0.5651 -  
 y1\_output\_root\_mean\_squared\_error: 0.4255 - y2\_output\_root\_mean\_squared\_error:  
 0.7524 - val\_loss: 1.2216 - val\_y1\_output\_loss: 0.2088 - val\_y2\_output\_loss:  
 0.9990 - val\_y1\_output\_root\_mean\_squared\_error: 0.4441 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0121  
 Epoch 361/500  
 614/614 [=====] - 0s 133us/sample - loss: 0.9569 -  
 y1\_output\_loss: 0.1905 - y2\_output\_loss: 0.7679 -  
 y1\_output\_root\_mean\_squared\_error: 0.4384 - y2\_output\_root\_mean\_squared\_error:  
 0.8745 - val\_loss: 2.9991 - val\_y1\_output\_loss: 0.3263 - val\_y2\_output\_loss:  
 2.6700 - val\_y1\_output\_root\_mean\_squared\_error: 0.5582 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.6394  
 Epoch 362/500  
 614/614 [=====] - 0s 135us/sample - loss: 0.8039 -  
 y1\_output\_loss: 0.1824 - y2\_output\_loss: 0.6174 -  
 y1\_output\_root\_mean\_squared\_error: 0.4280 - y2\_output\_root\_mean\_squared\_error:  
 0.7879 - val\_loss: 1.5646 - val\_y1\_output\_loss: 0.3469 - val\_y2\_output\_loss:  
 1.2143 - val\_y1\_output\_root\_mean\_squared\_error: 0.5662 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1154  
 Epoch 363/500  
 614/614 [=====] - 0s 135us/sample - loss: 0.7329 -  
 y1\_output\_loss: 0.1574 - y2\_output\_loss: 0.5704 -  
 y1\_output\_root\_mean\_squared\_error: 0.3975 - y2\_output\_root\_mean\_squared\_error:  
 0.7582 - val\_loss: 1.4334 - val\_y1\_output\_loss: 0.2686 - val\_y2\_output\_loss:  
 1.1378 - val\_y1\_output\_root\_mean\_squared\_error: 0.5171 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0798  
 Epoch 364/500  
 614/614 [=====] - 0s 136us/sample - loss: 0.7724 -  
 y1\_output\_loss: 0.1688 - y2\_output\_loss: 0.6021 -  
 y1\_output\_root\_mean\_squared\_error: 0.4106 - y2\_output\_root\_mean\_squared\_error:  
 0.7770 - val\_loss: 1.6424 - val\_y1\_output\_loss: 0.2096 - val\_y2\_output\_loss:  
 1.4075 - val\_y1\_output\_root\_mean\_squared\_error: 0.4541 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1984  
 Epoch 365/500  
 614/614 [=====] - 0s 133us/sample - loss: 0.8245 -  
 y1\_output\_loss: 0.2135 - y2\_output\_loss: 0.6204 -  
 y1\_output\_root\_mean\_squared\_error: 0.4488 - y2\_output\_root\_mean\_squared\_error:  
 0.7894 - val\_loss: 1.6111 - val\_y1\_output\_loss: 0.4479 - val\_y2\_output\_loss:  
 1.1347 - val\_y1\_output\_root\_mean\_squared\_error: 0.6744 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0753  
 Epoch 366/500  
 614/614 [=====] - 0s 129us/sample - loss: 0.7953 -  
 y1\_output\_loss: 0.1965 - y2\_output\_loss: 0.6090 -

y1\_output\_root\_mean\_squared\_error: 0.4402 - y2\_output\_root\_mean\_squared\_error:  
0.7756 - val\_loss: 5.6938 - val\_y1\_output\_loss: 0.9802 - val\_y2\_output\_loss:  
4.7781 - val\_y1\_output\_root\_mean\_squared\_error: 0.9489 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.1894  
Epoch 367/500  
614/614 [=====] - 0s 136us/sample - loss: 1.0864 -  
y1\_output\_loss: 0.2330 - y2\_output\_loss: 0.8484 -  
y1\_output\_root\_mean\_squared\_error: 0.4823 - y2\_output\_root\_mean\_squared\_error:  
0.9240 - val\_loss: 1.5399 - val\_y1\_output\_loss: 0.2192 - val\_y2\_output\_loss:  
1.2940 - val\_y1\_output\_root\_mean\_squared\_error: 0.4706 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1482  
Epoch 368/500  
614/614 [=====] - 0s 137us/sample - loss: 0.8323 -  
y1\_output\_loss: 0.1899 - y2\_output\_loss: 0.6394 -  
y1\_output\_root\_mean\_squared\_error: 0.4360 - y2\_output\_root\_mean\_squared\_error:  
0.8014 - val\_loss: 1.4893 - val\_y1\_output\_loss: 0.2153 - val\_y2\_output\_loss:  
1.2492 - val\_y1\_output\_root\_mean\_squared\_error: 0.4529 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1332  
Epoch 369/500  
614/614 [=====] - 0s 130us/sample - loss: 0.7451 -  
y1\_output\_loss: 0.1687 - y2\_output\_loss: 0.5700 -  
y1\_output\_root\_mean\_squared\_error: 0.4121 - y2\_output\_root\_mean\_squared\_error:  
0.7585 - val\_loss: 1.2199 - val\_y1\_output\_loss: 0.1770 - val\_y2\_output\_loss:  
1.0249 - val\_y1\_output\_root\_mean\_squared\_error: 0.4160 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0231  
Epoch 370/500  
614/614 [=====] - 0s 129us/sample - loss: 0.7372 -  
y1\_output\_loss: 0.1452 - y2\_output\_loss: 0.5877 -  
y1\_output\_root\_mean\_squared\_error: 0.3818 - y2\_output\_root\_mean\_squared\_error:  
0.7690 - val\_loss: 1.3429 - val\_y1\_output\_loss: 0.3198 - val\_y2\_output\_loss:  
1.0061 - val\_y1\_output\_root\_mean\_squared\_error: 0.5742 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0066  
Epoch 371/500  
614/614 [=====] - 0s 128us/sample - loss: 0.7522 -  
y1\_output\_loss: 0.1873 - y2\_output\_loss: 0.5612 -  
y1\_output\_root\_mean\_squared\_error: 0.4326 - y2\_output\_root\_mean\_squared\_error:  
0.7518 - val\_loss: 1.5339 - val\_y1\_output\_loss: 0.1802 - val\_y2\_output\_loss:  
1.3231 - val\_y1\_output\_root\_mean\_squared\_error: 0.4133 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1675  
Epoch 372/500  
614/614 [=====] - 0s 133us/sample - loss: 0.6931 -  
y1\_output\_loss: 0.1648 - y2\_output\_loss: 0.5259 -  
y1\_output\_root\_mean\_squared\_error: 0.4075 - y2\_output\_root\_mean\_squared\_error:  
0.7260 - val\_loss: 1.2595 - val\_y1\_output\_loss: 0.2113 - val\_y2\_output\_loss:  
1.0291 - val\_y1\_output\_root\_mean\_squared\_error: 0.4631 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0223  
Epoch 373/500  
614/614 [=====] - 0s 135us/sample - loss: 0.6746 -

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y1_output_loss: 0.1520 - y2_output_loss: 0.5253 -
y1_output_root_mean_squared_error: 0.3912 - y2_output_root_mean_squared_error:
0.7222 - val_loss: 1.4673 - val_y1_output_loss: 0.1833 - val_y2_output_loss:
1.2583 - val_y1_output_root_mean_squared_error: 0.4328 -
val_y2_output_root_mean_squared_error: 1.1314
Epoch 374/500
614/614 [=====] - 0s 134us/sample - loss: 0.8904 -
y1_output_loss: 0.1900 - y2_output_loss: 0.6927 -
y1_output_root_mean_squared_error: 0.4373 - y2_output_root_mean_squared_error:
0.8362 - val_loss: 1.2809 - val_y1_output_loss: 0.1922 - val_y2_output_loss:
1.0733 - val_y1_output_root_mean_squared_error: 0.4342 -
val_y2_output_root_mean_squared_error: 1.0451
Epoch 375/500
614/614 [=====] - 0s 129us/sample - loss: 0.7066 -
y1_output_loss: 0.1421 - y2_output_loss: 0.5604 -
y1_output_root_mean_squared_error: 0.3774 - y2_output_root_mean_squared_error:
0.7511 - val_loss: 1.3088 - val_y1_output_loss: 0.1765 - val_y2_output_loss:
1.1011 - val_y1_output_root_mean_squared_error: 0.4156 -
val_y2_output_root_mean_squared_error: 1.0658
Epoch 376/500
614/614 [=====] - 0s 130us/sample - loss: 0.6445 -
y1_output_loss: 0.1385 - y2_output_loss: 0.5024 -
y1_output_root_mean_squared_error: 0.3717 - y2_output_root_mean_squared_error:
0.7116 - val_loss: 1.1197 - val_y1_output_loss: 0.1723 - val_y2_output_loss:
0.9219 - val_y1_output_root_mean_squared_error: 0.4186 -
val_y2_output_root_mean_squared_error: 0.9719
Epoch 377/500
614/614 [=====] - 0s 129us/sample - loss: 1.0966 -
y1_output_loss: 0.2574 - y2_output_loss: 0.8308 -
y1_output_root_mean_squared_error: 0.5085 - y2_output_root_mean_squared_error:
0.9155 - val_loss: 1.2402 - val_y1_output_loss: 0.2147 - val_y2_output_loss:
1.0040 - val_y1_output_root_mean_squared_error: 0.4631 -
val_y2_output_root_mean_squared_error: 1.0128
Epoch 378/500
614/614 [=====] - 0s 130us/sample - loss: 0.6959 -
y1_output_loss: 0.1705 - y2_output_loss: 0.5202 -
y1_output_root_mean_squared_error: 0.4145 - y2_output_root_mean_squared_error:
0.7239 - val_loss: 1.1605 - val_y1_output_loss: 0.1742 - val_y2_output_loss:
0.9611 - val_y1_output_root_mean_squared_error: 0.4183 -
val_y2_output_root_mean_squared_error: 0.9927
Epoch 379/500
614/614 [=====] - 0s 130us/sample - loss: 0.6817 -
y1_output_loss: 0.1640 - y2_output_loss: 0.5158 -
y1_output_root_mean_squared_error: 0.4056 - y2_output_root_mean_squared_error:
0.7192 - val_loss: 1.1851 - val_y1_output_loss: 0.2121 - val_y2_output_loss:
0.9514 - val_y1_output_root_mean_squared_error: 0.4644 -
val_y2_output_root_mean_squared_error: 0.9846
Epoch 380/500

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614/614 [=====] - 0s 132us/sample - loss: 0.7303 -  
y1\_output\_loss: 0.1788 - y2\_output\_loss: 0.5963 -  
y1\_output\_root\_mean\_squared\_error: 0.4094 - y2\_output\_root\_mean\_squared\_error:  
0.7501 - val\_loss: 16.5403 - val\_y1\_output\_loss: 3.6942 - val\_y2\_output\_loss:  
13.2033 - val\_y1\_output\_root\_mean\_squared\_error: 1.9101 -  
val\_y2\_output\_root\_mean\_squared\_error: 3.5905  
Epoch 381/500  
614/614 [=====] - 0s 130us/sample - loss: 1.7260 -  
y1\_output\_loss: 0.3684 - y2\_output\_loss: 1.3469 -  
y1\_output\_root\_mean\_squared\_error: 0.6087 - y2\_output\_root\_mean\_squared\_error:  
1.1643 - val\_loss: 1.2931 - val\_y1\_output\_loss: 0.2380 - val\_y2\_output\_loss:  
1.0230 - val\_y1\_output\_root\_mean\_squared\_error: 0.4948 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0239  
Epoch 382/500  
614/614 [=====] - 0s 128us/sample - loss: 0.7891 -  
y1\_output\_loss: 0.1931 - y2\_output\_loss: 0.6023 -  
y1\_output\_root\_mean\_squared\_error: 0.4394 - y2\_output\_root\_mean\_squared\_error:  
0.7721 - val\_loss: 3.5051 - val\_y1\_output\_loss: 0.4156 - val\_y2\_output\_loss:  
3.0713 - val\_y1\_output\_root\_mean\_squared\_error: 0.6261 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.7644  
Epoch 383/500  
614/614 [=====] - 0s 127us/sample - loss: 0.7870 -  
y1\_output\_loss: 0.1802 - y2\_output\_loss: 0.6025 -  
y1\_output\_root\_mean\_squared\_error: 0.4240 - y2\_output\_root\_mean\_squared\_error:  
0.7792 - val\_loss: 1.6148 - val\_y1\_output\_loss: 0.3615 - val\_y2\_output\_loss:  
1.2099 - val\_y1\_output\_root\_mean\_squared\_error: 0.6120 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1137  
Epoch 384/500  
614/614 [=====] - 0s 128us/sample - loss: 0.8020 -  
y1\_output\_loss: 0.1772 - y2\_output\_loss: 0.6194 -  
y1\_output\_root\_mean\_squared\_error: 0.4223 - y2\_output\_root\_mean\_squared\_error:  
0.7898 - val\_loss: 1.7484 - val\_y1\_output\_loss: 0.2941 - val\_y2\_output\_loss:  
1.4469 - val\_y1\_output\_root\_mean\_squared\_error: 0.5252 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.2135  
Epoch 385/500  
614/614 [=====] - 0s 129us/sample - loss: 0.6066 -  
y1\_output\_loss: 0.1355 - y2\_output\_loss: 0.4664 -  
y1\_output\_root\_mean\_squared\_error: 0.3690 - y2\_output\_root\_mean\_squared\_error:  
0.6859 - val\_loss: 1.1034 - val\_y1\_output\_loss: 0.1820 - val\_y2\_output\_loss:  
0.9056 - val\_y1\_output\_root\_mean\_squared\_error: 0.4192 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9631  
Epoch 386/500  
614/614 [=====] - 0s 147us/sample - loss: 0.6962 -  
y1\_output\_loss: 0.1593 - y2\_output\_loss: 0.5334 -  
y1\_output\_root\_mean\_squared\_error: 0.4007 - y2\_output\_root\_mean\_squared\_error:  
0.7319 - val\_loss: 1.2193 - val\_y1\_output\_loss: 0.2026 - val\_y2\_output\_loss:  
0.9940 - val\_y1\_output\_root\_mean\_squared\_error: 0.4529 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0071

Epoch 387/500  
614/614 [=====] - 0s 129us/sample - loss: 0.6597 -  
y1\_output\_loss: 0.1505 - y2\_output\_loss: 0.5074 -  
y1\_output\_root\_mean\_squared\_error: 0.3876 - y2\_output\_root\_mean\_squared\_error:  
0.7138 - val\_loss: 1.4943 - val\_y1\_output\_loss: 0.2513 - val\_y2\_output\_loss:  
1.2179 - val\_y1\_output\_root\_mean\_squared\_error: 0.5068 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1124  
Epoch 388/500  
614/614 [=====] - 0s 131us/sample - loss: 0.6293 -  
y1\_output\_loss: 0.1556 - y2\_output\_loss: 0.4693 -  
y1\_output\_root\_mean\_squared\_error: 0.3953 - y2\_output\_root\_mean\_squared\_error:  
0.6878 - val\_loss: 1.3144 - val\_y1\_output\_loss: 0.3068 - val\_y2\_output\_loss:  
1.0087 - val\_y1\_output\_root\_mean\_squared\_error: 0.5342 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0144  
Epoch 389/500  
614/614 [=====] - 0s 135us/sample - loss: 0.8078 -  
y1\_output\_loss: 0.1789 - y2\_output\_loss: 0.6245 -  
y1\_output\_root\_mean\_squared\_error: 0.4227 - y2\_output\_root\_mean\_squared\_error:  
0.7932 - val\_loss: 1.1821 - val\_y1\_output\_loss: 0.2099 - val\_y2\_output\_loss:  
0.9613 - val\_y1\_output\_root\_mean\_squared\_error: 0.4543 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9878  
Epoch 390/500  
614/614 [=====] - 0s 132us/sample - loss: 0.5388 -  
y1\_output\_loss: 0.1520 - y2\_output\_loss: 0.3872 -  
y1\_output\_root\_mean\_squared\_error: 0.3881 - y2\_output\_root\_mean\_squared\_error:  
0.6231 - val\_loss: 1.1000 - val\_y1\_output\_loss: 0.1680 - val\_y2\_output\_loss:  
0.9093 - val\_y1\_output\_root\_mean\_squared\_error: 0.4065 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9669  
Epoch 391/500  
614/614 [=====] - 0s 132us/sample - loss: 0.6966 -  
y1\_output\_loss: 0.1630 - y2\_output\_loss: 0.5302 -  
y1\_output\_root\_mean\_squared\_error: 0.4037 - y2\_output\_root\_mean\_squared\_error:  
0.7305 - val\_loss: 1.2831 - val\_y1\_output\_loss: 0.1845 - val\_y2\_output\_loss:  
1.0764 - val\_y1\_output\_root\_mean\_squared\_error: 0.4207 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0517  
Epoch 392/500  
614/614 [=====] - 0s 131us/sample - loss: 0.5758 -  
y1\_output\_loss: 0.1310 - y2\_output\_loss: 0.4611 -  
y1\_output\_root\_mean\_squared\_error: 0.3624 - y2\_output\_root\_mean\_squared\_error:  
0.6667 - val\_loss: 4.6842 - val\_y1\_output\_loss: 0.4134 - val\_y2\_output\_loss:  
4.1766 - val\_y1\_output\_root\_mean\_squared\_error: 0.6551 -  
val\_y2\_output\_root\_mean\_squared\_error: 2.0628  
Epoch 393/500  
614/614 [=====] - 0s 139us/sample - loss: 0.6740 -  
y1\_output\_loss: 0.1376 - y2\_output\_loss: 0.5530 -  
y1\_output\_root\_mean\_squared\_error: 0.3713 - y2\_output\_root\_mean\_squared\_error:  
0.7322 - val\_loss: 1.5206 - val\_y1\_output\_loss: 0.3318 - val\_y2\_output\_loss:  
1.1624 - val\_y1\_output\_root\_mean\_squared\_error: 0.5684 -

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val_y2_output_root_mean_squared_error: 1.0943
Epoch 394/500
614/614 [=====] - 0s 132us/sample - loss: 1.0712 -
y1_output_loss: 0.2313 - y2_output_loss: 0.8317 -
y1_output_root_mean_squared_error: 0.4824 - y2_output_root_mean_squared_error:
0.9157 - val_loss: 1.3866 - val_y1_output_loss: 0.2089 - val_y2_output_loss:
1.1603 - val_y1_output_root_mean_squared_error: 0.4653 -
val_y2_output_root_mean_squared_error: 1.0817
Epoch 395/500
614/614 [=====] - 0s 133us/sample - loss: 1.2572 -
y1_output_loss: 0.2236 - y2_output_loss: 1.0251 -
y1_output_root_mean_squared_error: 0.4736 - y2_output_root_mean_squared_error:
1.0163 - val_loss: 1.3947 - val_y1_output_loss: 0.2626 - val_y2_output_loss:
1.1018 - val_y1_output_root_mean_squared_error: 0.5152 -
val_y2_output_root_mean_squared_error: 1.0627
Epoch 396/500
614/614 [=====] - 0s 138us/sample - loss: 0.6572 -
y1_output_loss: 0.1396 - y2_output_loss: 0.5219 -
y1_output_root_mean_squared_error: 0.3732 - y2_output_root_mean_squared_error:
0.7197 - val_loss: 1.9596 - val_y1_output_loss: 0.3499 - val_y2_output_loss:
1.5626 - val_y1_output_root_mean_squared_error: 0.6024 -
val_y2_output_root_mean_squared_error: 1.2636
Epoch 397/500
614/614 [=====] - 0s 130us/sample - loss: 0.6286 -
y1_output_loss: 0.1477 - y2_output_loss: 0.4800 -
y1_output_root_mean_squared_error: 0.3813 - y2_output_root_mean_squared_error:
0.6951 - val_loss: 1.1672 - val_y1_output_loss: 0.2282 - val_y2_output_loss:
0.9184 - val_y1_output_root_mean_squared_error: 0.4859 -
val_y2_output_root_mean_squared_error: 0.9649
Epoch 398/500
614/614 [=====] - 0s 133us/sample - loss: 0.6058 -
y1_output_loss: 0.1455 - y2_output_loss: 0.4577 -
y1_output_root_mean_squared_error: 0.3828 - y2_output_root_mean_squared_error:
0.6777 - val_loss: 1.2044 - val_y1_output_loss: 0.2059 - val_y2_output_loss:
0.9704 - val_y1_output_root_mean_squared_error: 0.4583 -
val_y2_output_root_mean_squared_error: 0.9971
Epoch 399/500
614/614 [=====] - 0s 132us/sample - loss: 0.5162 -
y1_output_loss: 0.1313 - y2_output_loss: 0.3816 -
y1_output_root_mean_squared_error: 0.3621 - y2_output_root_mean_squared_error:
0.6205 - val_loss: 1.2023 - val_y1_output_loss: 0.2310 - val_y2_output_loss:
0.9620 - val_y1_output_root_mean_squared_error: 0.4757 -
val_y2_output_root_mean_squared_error: 0.9880
Epoch 400/500
614/614 [=====] - 0s 134us/sample - loss: 0.4936 -
y1_output_loss: 0.1324 - y2_output_loss: 0.3787 -
y1_output_root_mean_squared_error: 0.3650 - y2_output_root_mean_squared_error:
0.6003 - val_loss: 2.0352 - val_y1_output_loss: 0.2614 - val_y2_output_loss:

```

1.7237 - val\_y1\_output\_root\_mean\_squared\_error: 0.5204 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.3283  
 Epoch 401/500  
 614/614 [=====] - 0s 138us/sample - loss: 0.7100 -  
 y1\_output\_loss: 0.1552 - y2\_output\_loss: 0.5501 -  
 y1\_output\_root\_mean\_squared\_error: 0.3952 - y2\_output\_root\_mean\_squared\_error:  
 0.7442 - val\_loss: 1.2972 - val\_y1\_output\_loss: 0.2748 - val\_y2\_output\_loss:  
 1.0206 - val\_y1\_output\_root\_mean\_squared\_error: 0.5076 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0196  
 Epoch 402/500  
 614/614 [=====] - 0s 129us/sample - loss: 0.7947 -  
 y1\_output\_loss: 0.1653 - y2\_output\_loss: 0.6349 -  
 y1\_output\_root\_mean\_squared\_error: 0.4050 - y2\_output\_root\_mean\_squared\_error:  
 0.7942 - val\_loss: 1.9242 - val\_y1\_output\_loss: 0.4108 - val\_y2\_output\_loss:  
 1.5358 - val\_y1\_output\_root\_mean\_squared\_error: 0.6249 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2384  
 Epoch 403/500  
 614/614 [=====] - 0s 132us/sample - loss: 0.6502 -  
 y1\_output\_loss: 0.1670 - y2\_output\_loss: 0.4818 -  
 y1\_output\_root\_mean\_squared\_error: 0.4092 - y2\_output\_root\_mean\_squared\_error:  
 0.6948 - val\_loss: 1.3031 - val\_y1\_output\_loss: 0.2476 - val\_y2\_output\_loss:  
 1.0245 - val\_y1\_output\_root\_mean\_squared\_error: 0.5025 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0250  
 Epoch 404/500  
 614/614 [=====] - 0s 132us/sample - loss: 0.5702 -  
 y1\_output\_loss: 0.1496 - y2\_output\_loss: 0.4224 -  
 y1\_output\_root\_mean\_squared\_error: 0.3830 - y2\_output\_root\_mean\_squared\_error:  
 0.6508 - val\_loss: 1.2531 - val\_y1\_output\_loss: 0.2362 - val\_y2\_output\_loss:  
 0.9876 - val\_y1\_output\_root\_mean\_squared\_error: 0.4891 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0069  
 Epoch 405/500  
 614/614 [=====] - 0s 132us/sample - loss: 0.5095 -  
 y1\_output\_loss: 0.1272 - y2\_output\_loss: 0.3796 -  
 y1\_output\_root\_mean\_squared\_error: 0.3565 - y2\_output\_root\_mean\_squared\_error:  
 0.6184 - val\_loss: 1.5200 - val\_y1\_output\_loss: 0.2834 - val\_y2\_output\_loss:  
 1.2299 - val\_y1\_output\_root\_mean\_squared\_error: 0.5240 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1160  
 Epoch 406/500  
 614/614 [=====] - 0s 136us/sample - loss: 0.7593 -  
 y1\_output\_loss: 0.1653 - y2\_output\_loss: 0.5911 -  
 y1\_output\_root\_mean\_squared\_error: 0.4070 - y2\_output\_root\_mean\_squared\_error:  
 0.7705 - val\_loss: 1.1605 - val\_y1\_output\_loss: 0.1654 - val\_y2\_output\_loss:  
 0.9816 - val\_y1\_output\_root\_mean\_squared\_error: 0.4049 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.9982  
 Epoch 407/500  
 614/614 [=====] - 0s 130us/sample - loss: 0.5277 -  
 y1\_output\_loss: 0.1322 - y2\_output\_loss: 0.3930 -  
 y1\_output\_root\_mean\_squared\_error: 0.3636 - y2\_output\_root\_mean\_squared\_error:

0.6289 - val\_loss: 1.2679 - val\_y1\_output\_loss: 0.2285 - val\_y2\_output\_loss:  
 1.0121 - val\_y1\_output\_root\_mean\_squared\_error: 0.4842 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0166  
 Epoch 408/500  
 614/614 [=====] - 0s 131us/sample - loss: 0.5845 -  
 y1\_output\_loss: 0.1385 - y2\_output\_loss: 0.4606 -  
 y1\_output\_root\_mean\_squared\_error: 0.3708 - y2\_output\_root\_mean\_squared\_error:  
 0.6686 - val\_loss: 2.2139 - val\_y1\_output\_loss: 0.2245 - val\_y2\_output\_loss:  
 1.9720 - val\_y1\_output\_root\_mean\_squared\_error: 0.4594 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.4152  
 Epoch 409/500  
 614/614 [=====] - 0s 134us/sample - loss: 1.2433 -  
 y1\_output\_loss: 0.2442 - y2\_output\_loss: 0.9933 -  
 y1\_output\_root\_mean\_squared\_error: 0.4959 - y2\_output\_root\_mean\_squared\_error:  
 0.9987 - val\_loss: 1.5366 - val\_y1\_output\_loss: 0.2598 - val\_y2\_output\_loss:  
 1.2563 - val\_y1\_output\_root\_mean\_squared\_error: 0.5004 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1341  
 Epoch 410/500  
 614/614 [=====] - 0s 137us/sample - loss: 0.5576 -  
 y1\_output\_loss: 0.1358 - y2\_output\_loss: 0.4175 -  
 y1\_output\_root\_mean\_squared\_error: 0.3702 - y2\_output\_root\_mean\_squared\_error:  
 0.6485 - val\_loss: 1.1093 - val\_y1\_output\_loss: 0.1634 - val\_y2\_output\_loss:  
 0.9310 - val\_y1\_output\_root\_mean\_squared\_error: 0.3968 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.9756  
 Epoch 411/500  
 614/614 [=====] - 0s 130us/sample - loss: 0.5633 -  
 y1\_output\_loss: 0.1314 - y2\_output\_loss: 0.4307 -  
 y1\_output\_root\_mean\_squared\_error: 0.3614 - y2\_output\_root\_mean\_squared\_error:  
 0.6578 - val\_loss: 1.3172 - val\_y1\_output\_loss: 0.2284 - val\_y2\_output\_loss:  
 1.0797 - val\_y1\_output\_root\_mean\_squared\_error: 0.4730 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0457  
 Epoch 412/500  
 614/614 [=====] - 0s 132us/sample - loss: 0.8327 -  
 y1\_output\_loss: 0.1873 - y2\_output\_loss: 0.6445 -  
 y1\_output\_root\_mean\_squared\_error: 0.4338 - y2\_output\_root\_mean\_squared\_error:  
 0.8029 - val\_loss: 1.4656 - val\_y1\_output\_loss: 0.1668 - val\_y2\_output\_loss:  
 1.2849 - val\_y1\_output\_root\_mean\_squared\_error: 0.4074 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1400  
 Epoch 413/500  
 614/614 [=====] - 0s 131us/sample - loss: 0.6741 -  
 y1\_output\_loss: 0.1665 - y2\_output\_loss: 0.5065 -  
 y1\_output\_root\_mean\_squared\_error: 0.4074 - y2\_output\_root\_mean\_squared\_error:  
 0.7128 - val\_loss: 2.6978 - val\_y1\_output\_loss: 0.3096 - val\_y2\_output\_loss:  
 2.3760 - val\_y1\_output\_root\_mean\_squared\_error: 0.5439 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.5498  
 Epoch 414/500  
 614/614 [=====] - 0s 130us/sample - loss: 0.4712 -  
 y1\_output\_loss: 0.1214 - y2\_output\_loss: 0.3654 -



y1\_output\_root\_mean\_squared\_error: 0.3488 - y2\_output\_root\_mean\_squared\_error:  
0.5912 - val\_loss: 3.3247 - val\_y1\_output\_loss: 0.2272 - val\_y2\_output\_loss:  
3.0175 - val\_y1\_output\_root\_mean\_squared\_error: 0.4823 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.7584  
Epoch 415/500  
614/614 [=====] - 0s 131us/sample - loss: 1.3935 -  
y1\_output\_loss: 0.2405 - y2\_output\_loss: 1.1445 -  
y1\_output\_root\_mean\_squared\_error: 0.4904 - y2\_output\_root\_mean\_squared\_error:  
1.0738 - val\_loss: 1.3432 - val\_y1\_output\_loss: 0.2310 - val\_y2\_output\_loss:  
1.1042 - val\_y1\_output\_root\_mean\_squared\_error: 0.4839 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0531  
Epoch 416/500  
614/614 [=====] - 0s 139us/sample - loss: 0.6540 -  
y1\_output\_loss: 0.1735 - y2\_output\_loss: 0.4801 -  
y1\_output\_root\_mean\_squared\_error: 0.4153 - y2\_output\_root\_mean\_squared\_error:  
0.6940 - val\_loss: 1.7528 - val\_y1\_output\_loss: 0.2325 - val\_y2\_output\_loss:  
1.5107 - val\_y1\_output\_root\_mean\_squared\_error: 0.4717 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.2371  
Epoch 417/500  
614/614 [=====] - 0s 133us/sample - loss: 0.5269 -  
y1\_output\_loss: 0.1300 - y2\_output\_loss: 0.3953 -  
y1\_output\_root\_mean\_squared\_error: 0.3609 - y2\_output\_root\_mean\_squared\_error:  
0.6299 - val\_loss: 1.3842 - val\_y1\_output\_loss: 0.2364 - val\_y2\_output\_loss:  
1.1547 - val\_y1\_output\_root\_mean\_squared\_error: 0.4717 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0778  
Epoch 418/500  
614/614 [=====] - 0s 133us/sample - loss: 0.5019 -  
y1\_output\_loss: 0.1317 - y2\_output\_loss: 0.3667 -  
y1\_output\_root\_mean\_squared\_error: 0.3633 - y2\_output\_root\_mean\_squared\_error:  
0.6082 - val\_loss: 1.0966 - val\_y1\_output\_loss: 0.1929 - val\_y2\_output\_loss:  
0.8811 - val\_y1\_output\_root\_mean\_squared\_error: 0.4467 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9471  
Epoch 419/500  
614/614 [=====] - 0s 131us/sample - loss: 0.7573 -  
y1\_output\_loss: 0.1938 - y2\_output\_loss: 0.5575 -  
y1\_output\_root\_mean\_squared\_error: 0.4416 - y2\_output\_root\_mean\_squared\_error:  
0.7499 - val\_loss: 1.0006 - val\_y1\_output\_loss: 0.1587 - val\_y2\_output\_loss:  
0.8272 - val\_y1\_output\_root\_mean\_squared\_error: 0.4008 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9165  
Epoch 420/500  
614/614 [=====] - 0s 132us/sample - loss: 0.4712 -  
y1\_output\_loss: 0.1256 - y2\_output\_loss: 0.3428 -  
y1\_output\_root\_mean\_squared\_error: 0.3551 - y2\_output\_root\_mean\_squared\_error:  
0.5875 - val\_loss: 1.1206 - val\_y1\_output\_loss: 0.2278 - val\_y2\_output\_loss:  
0.8704 - val\_y1\_output\_root\_mean\_squared\_error: 0.4816 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9427  
Epoch 421/500  
614/614 [=====] - 0s 130us/sample - loss: 0.6312 -

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y1_output_loss: 0.1498 - y2_output_loss: 0.4792 -
y1_output_root_mean_squared_error: 0.3874 - y2_output_root_mean_squared_error:
0.6936 - val_loss: 1.0701 - val_y1_output_loss: 0.1694 - val_y2_output_loss:
0.8852 - val_y1_output_root_mean_squared_error: 0.4124 -
val_y2_output_root_mean_squared_error: 0.9487
Epoch 422/500
614/614 [=====] - 0s 130us/sample - loss: 0.6285 -
y1_output_loss: 0.1512 - y2_output_loss: 0.5008 -
y1_output_root_mean_squared_error: 0.3906 - y2_output_root_mean_squared_error:
0.6899 - val_loss: 3.9278 - val_y1_output_loss: 0.2898 - val_y2_output_loss:
3.5306 - val_y1_output_root_mean_squared_error: 0.5447 -
val_y2_output_root_mean_squared_error: 1.9056
Epoch 423/500
614/614 [=====] - 0s 131us/sample - loss: 0.7002 -
y1_output_loss: 0.1576 - y2_output_loss: 0.5563 -
y1_output_root_mean_squared_error: 0.3985 - y2_output_root_mean_squared_error:
0.7358 - val_loss: 5.8815 - val_y1_output_loss: 0.4900 - val_y2_output_loss:
5.2856 - val_y1_output_root_mean_squared_error: 0.7130 -
val_y2_output_root_mean_squared_error: 2.3180
Epoch 424/500
614/614 [=====] - 0s 131us/sample - loss: 1.0397 -
y1_output_loss: 0.1996 - y2_output_loss: 0.8323 -
y1_output_root_mean_squared_error: 0.4482 - y2_output_root_mean_squared_error:
0.9159 - val_loss: 1.3050 - val_y1_output_loss: 0.2206 - val_y2_output_loss:
1.0580 - val_y1_output_root_mean_squared_error: 0.4624 -
val_y2_output_root_mean_squared_error: 1.0446
Epoch 425/500
614/614 [=====] - 0s 130us/sample - loss: 0.5551 -
y1_output_loss: 0.1421 - y2_output_loss: 0.4343 -
y1_output_root_mean_squared_error: 0.3714 - y2_output_root_mean_squared_error:
0.6459 - val_loss: 3.8125 - val_y1_output_loss: 0.5312 - val_y2_output_loss:
3.3707 - val_y1_output_root_mean_squared_error: 0.7011 -
val_y2_output_root_mean_squared_error: 1.8223
Epoch 426/500
614/614 [=====] - 0s 130us/sample - loss: 0.9092 -
y1_output_loss: 0.1798 - y2_output_loss: 0.7220 -
y1_output_root_mean_squared_error: 0.4255 - y2_output_root_mean_squared_error:
0.8533 - val_loss: 1.0809 - val_y1_output_loss: 0.1540 - val_y2_output_loss:
0.9041 - val_y1_output_root_mean_squared_error: 0.3950 -
val_y2_output_root_mean_squared_error: 0.9617
Epoch 427/500
614/614 [=====] - 0s 130us/sample - loss: 0.4842 -
y1_output_loss: 0.1219 - y2_output_loss: 0.3618 -
y1_output_root_mean_squared_error: 0.3468 - y2_output_root_mean_squared_error:
0.6033 - val_loss: 1.2508 - val_y1_output_loss: 0.1865 - val_y2_output_loss:
1.0416 - val_y1_output_root_mean_squared_error: 0.4306 -
val_y2_output_root_mean_squared_error: 1.0322
Epoch 428/500

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614/614 [=====] - 0s 132us/sample - loss: 0.5439 -
y1_output_loss: 0.1327 - y2_output_loss: 0.4105 -
y1_output_root_mean_squared_error: 0.3652 - y2_output_root_mean_squared_error:
0.6407 - val_loss: 1.0582 - val_y1_output_loss: 0.1808 - val_y2_output_loss:
0.8525 - val_y1_output_root_mean_squared_error: 0.4252 -
val_y2_output_root_mean_squared_error: 0.9367
Epoch 429/500
614/614 [=====] - 0s 132us/sample - loss: 1.4153 -
y1_output_loss: 0.2624 - y2_output_loss: 1.1404 -
y1_output_root_mean_squared_error: 0.5143 - y2_output_root_mean_squared_error:
1.0728 - val_loss: 1.1051 - val_y1_output_loss: 0.1874 - val_y2_output_loss:
0.8947 - val_y1_output_root_mean_squared_error: 0.4359 -
val_y2_output_root_mean_squared_error: 0.9566
Epoch 430/500
614/614 [=====] - 0s 132us/sample - loss: 0.5650 -
y1_output_loss: 0.1613 - y2_output_loss: 0.4033 -
y1_output_root_mean_squared_error: 0.4010 - y2_output_root_mean_squared_error:
0.6358 - val_loss: 1.0910 - val_y1_output_loss: 0.1725 - val_y2_output_loss:
0.9017 - val_y1_output_root_mean_squared_error: 0.4126 -
val_y2_output_root_mean_squared_error: 0.9596
Epoch 431/500
614/614 [=====] - 0s 130us/sample - loss: 0.8224 -
y1_output_loss: 0.1887 - y2_output_loss: 0.6403 -
y1_output_root_mean_squared_error: 0.4312 - y2_output_root_mean_squared_error:
0.7978 - val_loss: 1.2328 - val_y1_output_loss: 0.1698 - val_y2_output_loss:
1.0490 - val_y1_output_root_mean_squared_error: 0.4130 -
val_y2_output_root_mean_squared_error: 1.0306
Epoch 432/500
614/614 [=====] - 0s 127us/sample - loss: 0.6626 -
y1_output_loss: 0.1501 - y2_output_loss: 0.5075 -
y1_output_root_mean_squared_error: 0.3889 - y2_output_root_mean_squared_error:
0.7151 - val_loss: 1.3789 - val_y1_output_loss: 0.2765 - val_y2_output_loss:
1.0894 - val_y1_output_root_mean_squared_error: 0.5189 -
val_y2_output_root_mean_squared_error: 1.0534
Epoch 433/500
614/614 [=====] - 0s 127us/sample - loss: 0.5846 -
y1_output_loss: 0.1435 - y2_output_loss: 0.4367 -
y1_output_root_mean_squared_error: 0.3802 - y2_output_root_mean_squared_error:
0.6633 - val_loss: 1.0243 - val_y1_output_loss: 0.1530 - val_y2_output_loss:
0.8502 - val_y1_output_root_mean_squared_error: 0.3906 -
val_y2_output_root_mean_squared_error: 0.9337
Epoch 434/500
614/614 [=====] - 0s 127us/sample - loss: 0.4836 -
y1_output_loss: 0.1378 - y2_output_loss: 0.3497 -
y1_output_root_mean_squared_error: 0.3713 - y2_output_root_mean_squared_error:
0.5881 - val_loss: 1.4032 - val_y1_output_loss: 0.2600 - val_y2_output_loss:
1.1134 - val_y1_output_root_mean_squared_error: 0.5188 -
val_y2_output_root_mean_squared_error: 1.0649

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Epoch 435/500

614/614 [=====] - 0s 132us/sample - loss: 0.5040 -  
y1\_output\_loss: 0.1487 - y2\_output\_loss: 0.3647 -  
y1\_output\_root\_mean\_squared\_error: 0.3701 - y2\_output\_root\_mean\_squared\_error:  
0.6058 - val\_loss: 1.7182 - val\_y1\_output\_loss: 0.3508 - val\_y2\_output\_loss:  
1.3720 - val\_y1\_output\_root\_mean\_squared\_error: 0.5801 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1754

Epoch 436/500

614/614 [=====] - 0s 131us/sample - loss: 1.2541 -  
y1\_output\_loss: 0.2870 - y2\_output\_loss: 0.9582 -  
y1\_output\_root\_mean\_squared\_error: 0.5366 - y2\_output\_root\_mean\_squared\_error:  
0.9829 - val\_loss: 1.6858 - val\_y1\_output\_loss: 0.1925 - val\_y2\_output\_loss:  
1.4569 - val\_y1\_output\_root\_mean\_squared\_error: 0.4427 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.2206

Epoch 437/500

614/614 [=====] - 0s 133us/sample - loss: 0.4879 -  
y1\_output\_loss: 0.1339 - y2\_output\_loss: 0.3513 -  
y1\_output\_root\_mean\_squared\_error: 0.3664 - y2\_output\_root\_mean\_squared\_error:  
0.5947 - val\_loss: 1.7185 - val\_y1\_output\_loss: 0.1998 - val\_y2\_output\_loss:  
1.5133 - val\_y1\_output\_root\_mean\_squared\_error: 0.4335 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.2372

Epoch 438/500

614/614 [=====] - 0s 135us/sample - loss: 0.4769 -  
y1\_output\_loss: 0.1453 - y2\_output\_loss: 0.3292 -  
y1\_output\_root\_mean\_squared\_error: 0.3806 - y2\_output\_root\_mean\_squared\_error:  
0.5762 - val\_loss: 1.0395 - val\_y1\_output\_loss: 0.2016 - val\_y2\_output\_loss:  
0.8254 - val\_y1\_output\_root\_mean\_squared\_error: 0.4437 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9179

Epoch 439/500

614/614 [=====] - 0s 138us/sample - loss: 1.0821 -  
y1\_output\_loss: 0.1963 - y2\_output\_loss: 0.8787 -  
y1\_output\_root\_mean\_squared\_error: 0.4420 - y2\_output\_root\_mean\_squared\_error:  
0.9417 - val\_loss: 1.1434 - val\_y1\_output\_loss: 0.2450 - val\_y2\_output\_loss:  
0.8775 - val\_y1\_output\_root\_mean\_squared\_error: 0.4939 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9484

Epoch 440/500

614/614 [=====] - 0s 135us/sample - loss: 0.4801 -  
y1\_output\_loss: 0.1210 - y2\_output\_loss: 0.3626 -  
y1\_output\_root\_mean\_squared\_error: 0.3489 - y2\_output\_root\_mean\_squared\_error:  
0.5987 - val\_loss: 1.1745 - val\_y1\_output\_loss: 0.1682 - val\_y2\_output\_loss:  
0.9847 - val\_y1\_output\_root\_mean\_squared\_error: 0.4046 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.0054

Epoch 441/500

614/614 [=====] - 0s 137us/sample - loss: 1.0736 -  
y1\_output\_loss: 0.2500 - y2\_output\_loss: 0.8151 -  
y1\_output\_root\_mean\_squared\_error: 0.5021 - y2\_output\_root\_mean\_squared\_error:  
0.9063 - val\_loss: 1.2318 - val\_y1\_output\_loss: 0.1853 - val\_y2\_output\_loss:  
1.0194 - val\_y1\_output\_root\_mean\_squared\_error: 0.4258 -

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val_y2_output_root_mean_squared_error: 1.0249
Epoch 442/500
614/614 [=====] - 0s 136us/sample - loss: 0.5043 -
y1_output_loss: 0.1264 - y2_output_loss: 0.3818 -
y1_output_root_mean_squared_error: 0.3505 - y2_output_root_mean_squared_error:
0.6176 - val_loss: 1.3100 - val_y1_output_loss: 0.1642 - val_y2_output_loss:
1.1333 - val_y1_output_root_mean_squared_error: 0.3965 -
val_y2_output_root_mean_squared_error: 1.0737
Epoch 443/500
614/614 [=====] - 0s 136us/sample - loss: 0.5699 -
y1_output_loss: 0.1543 - y2_output_loss: 0.4125 -
y1_output_root_mean_squared_error: 0.3943 - y2_output_root_mean_squared_error:
0.6438 - val_loss: 1.0952 - val_y1_output_loss: 0.2243 - val_y2_output_loss:
0.8682 - val_y1_output_root_mean_squared_error: 0.4722 -
val_y2_output_root_mean_squared_error: 0.9339
Epoch 444/500
614/614 [=====] - 0s 134us/sample - loss: 0.4877 -
y1_output_loss: 0.1292 - y2_output_loss: 0.3636 -
y1_output_root_mean_squared_error: 0.3606 - y2_output_root_mean_squared_error:
0.5980 - val_loss: 2.2050 - val_y1_output_loss: 0.1611 - val_y2_output_loss:
1.9981 - val_y1_output_root_mean_squared_error: 0.4049 -
val_y2_output_root_mean_squared_error: 1.4287
Epoch 445/500
614/614 [=====] - 0s 136us/sample - loss: 0.5615 -
y1_output_loss: 0.1464 - y2_output_loss: 0.4120 -
y1_output_root_mean_squared_error: 0.3825 - y2_output_root_mean_squared_error:
0.6444 - val_loss: 0.9534 - val_y1_output_loss: 0.1712 - val_y2_output_loss:
0.7696 - val_y1_output_root_mean_squared_error: 0.4052 -
val_y2_output_root_mean_squared_error: 0.8884
Epoch 446/500
614/614 [=====] - 0s 133us/sample - loss: 0.5613 -
y1_output_loss: 0.1323 - y2_output_loss: 0.4254 -
y1_output_root_mean_squared_error: 0.3641 - y2_output_root_mean_squared_error:
0.6548 - val_loss: 0.9840 - val_y1_output_loss: 0.1625 - val_y2_output_loss:
0.8061 - val_y1_output_root_mean_squared_error: 0.3998 -
val_y2_output_root_mean_squared_error: 0.9078
Epoch 447/500
614/614 [=====] - 0s 136us/sample - loss: 0.4132 -
y1_output_loss: 0.1335 - y2_output_loss: 0.2878 -
y1_output_root_mean_squared_error: 0.3609 - y2_output_root_mean_squared_error:
0.5320 - val_loss: 1.5091 - val_y1_output_loss: 0.3266 - val_y2_output_loss:
1.1487 - val_y1_output_root_mean_squared_error: 0.5814 -
val_y2_output_root_mean_squared_error: 1.0822
Epoch 448/500
614/614 [=====] - 0s 132us/sample - loss: 0.5714 -
y1_output_loss: 0.1636 - y2_output_loss: 0.4079 -
y1_output_root_mean_squared_error: 0.4060 - y2_output_root_mean_squared_error:
0.6376 - val_loss: 1.0118 - val_y1_output_loss: 0.1940 - val_y2_output_loss:

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0.8204 - val\_y1\_output\_root\_mean\_squared\_error: 0.4443 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9024  
Epoch 449/500  
614/614 [=====] - 0s 133us/sample - loss: 0.4223 -  
y1\_output\_loss: 0.1260 - y2\_output\_loss: 0.2961 -  
y1\_output\_root\_mean\_squared\_error: 0.3545 - y2\_output\_root\_mean\_squared\_error:  
0.5446 - val\_loss: 1.0449 - val\_y1\_output\_loss: 0.1674 - val\_y2\_output\_loss:  
0.8679 - val\_y1\_output\_root\_mean\_squared\_error: 0.4095 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9366  
Epoch 450/500  
614/614 [=====] - 0s 135us/sample - loss: 0.4490 -  
y1\_output\_loss: 0.1384 - y2\_output\_loss: 0.3141 -  
y1\_output\_root\_mean\_squared\_error: 0.3723 - y2\_output\_root\_mean\_squared\_error:  
0.5571 - val\_loss: 1.0103 - val\_y1\_output\_loss: 0.1783 - val\_y2\_output\_loss:  
0.8212 - val\_y1\_output\_root\_mean\_squared\_error: 0.4202 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9131  
Epoch 451/500  
614/614 [=====] - 0s 134us/sample - loss: 0.5205 -  
y1\_output\_loss: 0.1340 - y2\_output\_loss: 0.3871 -  
y1\_output\_root\_mean\_squared\_error: 0.3647 - y2\_output\_root\_mean\_squared\_error:  
0.6225 - val\_loss: 2.0002 - val\_y1\_output\_loss: 0.3113 - val\_y2\_output\_loss:  
1.7306 - val\_y1\_output\_root\_mean\_squared\_error: 0.5412 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.3066  
Epoch 452/500  
614/614 [=====] - 0s 131us/sample - loss: 0.6257 -  
y1\_output\_loss: 0.1598 - y2\_output\_loss: 0.4678 -  
y1\_output\_root\_mean\_squared\_error: 0.3994 - y2\_output\_root\_mean\_squared\_error:  
0.6828 - val\_loss: 1.1584 - val\_y1\_output\_loss: 0.1744 - val\_y2\_output\_loss:  
0.9697 - val\_y1\_output\_root\_mean\_squared\_error: 0.4112 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9946  
Epoch 453/500  
614/614 [=====] - 0s 143us/sample - loss: 0.5853 -  
y1\_output\_loss: 0.1526 - y2\_output\_loss: 0.4308 -  
y1\_output\_root\_mean\_squared\_error: 0.3914 - y2\_output\_root\_mean\_squared\_error:  
0.6573 - val\_loss: 1.6002 - val\_y1\_output\_loss: 0.2977 - val\_y2\_output\_loss:  
1.2616 - val\_y1\_output\_root\_mean\_squared\_error: 0.5534 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.1375  
Epoch 454/500  
614/614 [=====] - 0s 132us/sample - loss: 0.4364 -  
y1\_output\_loss: 0.1256 - y2\_output\_loss: 0.3094 -  
y1\_output\_root\_mean\_squared\_error: 0.3545 - y2\_output\_root\_mean\_squared\_error:  
0.5574 - val\_loss: 1.0448 - val\_y1\_output\_loss: 0.1707 - val\_y2\_output\_loss:  
0.8624 - val\_y1\_output\_root\_mean\_squared\_error: 0.4137 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9347  
Epoch 455/500  
614/614 [=====] - 0s 128us/sample - loss: 0.4651 -  
y1\_output\_loss: 0.1410 - y2\_output\_loss: 0.3229 -  
y1\_output\_root\_mean\_squared\_error: 0.3754 - y2\_output\_root\_mean\_squared\_error:

0.5693 - val\_loss: 1.1881 - val\_y1\_output\_loss: 0.2672 - val\_y2\_output\_loss:  
 0.9233 - val\_y1\_output\_root\_mean\_squared\_error: 0.5003 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.9684  
 Epoch 456/500  
 614/614 [=====] - 0s 127us/sample - loss: 0.5814 -  
 y1\_output\_loss: 0.1640 - y2\_output\_loss: 0.4177 -  
 y1\_output\_root\_mean\_squared\_error: 0.4043 - y2\_output\_root\_mean\_squared\_error:  
 0.6465 - val\_loss: 1.6594 - val\_y1\_output\_loss: 0.2969 - val\_y2\_output\_loss:  
 1.3283 - val\_y1\_output\_root\_mean\_squared\_error: 0.5445 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1675  
 Epoch 457/500  
 614/614 [=====] - 0s 136us/sample - loss: 0.3998 -  
 y1\_output\_loss: 0.1237 - y2\_output\_loss: 0.2738 -  
 y1\_output\_root\_mean\_squared\_error: 0.3518 - y2\_output\_root\_mean\_squared\_error:  
 0.5254 - val\_loss: 0.9323 - val\_y1\_output\_loss: 0.1604 - val\_y2\_output\_loss:  
 0.7585 - val\_y1\_output\_root\_mean\_squared\_error: 0.3927 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.8821  
 Epoch 458/500  
 614/614 [=====] - 0s 136us/sample - loss: 0.4554 -  
 y1\_output\_loss: 0.1224 - y2\_output\_loss: 0.3317 -  
 y1\_output\_root\_mean\_squared\_error: 0.3513 - y2\_output\_root\_mean\_squared\_error:  
 0.5762 - val\_loss: 1.4949 - val\_y1\_output\_loss: 0.2297 - val\_y2\_output\_loss:  
 1.2293 - val\_y1\_output\_root\_mean\_squared\_error: 0.4800 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.1245  
 Epoch 459/500  
 614/614 [=====] - 0s 137us/sample - loss: 0.6088 -  
 y1\_output\_loss: 0.1502 - y2\_output\_loss: 0.4542 -  
 y1\_output\_root\_mean\_squared\_error: 0.3890 - y2\_output\_root\_mean\_squared\_error:  
 0.6764 - val\_loss: 1.1663 - val\_y1\_output\_loss: 0.1510 - val\_y2\_output\_loss:  
 0.9943 - val\_y1\_output\_root\_mean\_squared\_error: 0.3855 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0088  
 Epoch 460/500  
 614/614 [=====] - 0s 133us/sample - loss: 0.4197 -  
 y1\_output\_loss: 0.1221 - y2\_output\_loss: 0.2957 -  
 y1\_output\_root\_mean\_squared\_error: 0.3508 - y2\_output\_root\_mean\_squared\_error:  
 0.5446 - val\_loss: 1.2733 - val\_y1\_output\_loss: 0.1701 - val\_y2\_output\_loss:  
 1.0811 - val\_y1\_output\_root\_mean\_squared\_error: 0.4190 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0478  
 Epoch 461/500  
 614/614 [=====] - 0s 133us/sample - loss: 0.5449 -  
 y1\_output\_loss: 0.1359 - y2\_output\_loss: 0.4083 -  
 y1\_output\_root\_mean\_squared\_error: 0.3695 - y2\_output\_root\_mean\_squared\_error:  
 0.6391 - val\_loss: 1.0031 - val\_y1\_output\_loss: 0.1721 - val\_y2\_output\_loss:  
 0.8181 - val\_y1\_output\_root\_mean\_squared\_error: 0.4183 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.9100  
 Epoch 462/500  
 614/614 [=====] - 0s 137us/sample - loss: 0.4939 -  
 y1\_output\_loss: 0.1336 - y2\_output\_loss: 0.3611 -

y1\_output\_root\_mean\_squared\_error: 0.3653 - y2\_output\_root\_mean\_squared\_error:  
 0.6003 - val\_loss: 1.7680 - val\_y1\_output\_loss: 0.3136 - val\_y2\_output\_loss:  
 1.4121 - val\_y1\_output\_root\_mean\_squared\_error: 0.5701 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.2012  
 Epoch 463/500  
 614/614 [=====] - 0s 137us/sample - loss: 0.4083 -  
 y1\_output\_loss: 0.1229 - y2\_output\_loss: 0.2901 -  
 y1\_output\_root\_mean\_squared\_error: 0.3509 - y2\_output\_root\_mean\_squared\_error:  
 0.5340 - val\_loss: 1.2868 - val\_y1\_output\_loss: 0.1798 - val\_y2\_output\_loss:  
 1.0791 - val\_y1\_output\_root\_mean\_squared\_error: 0.4247 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.0519  
 Epoch 464/500  
 614/614 [=====] - 0s 135us/sample - loss: 0.4418 -  
 y1\_output\_loss: 0.1270 - y2\_output\_loss: 0.3174 -  
 y1\_output\_root\_mean\_squared\_error: 0.3561 - y2\_output\_root\_mean\_squared\_error:  
 0.5612 - val\_loss: 2.5964 - val\_y1\_output\_loss: 0.4854 - val\_y2\_output\_loss:  
 2.0379 - val\_y1\_output\_root\_mean\_squared\_error: 0.7099 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.4465  
 Epoch 465/500  
 614/614 [=====] - 0s 135us/sample - loss: 0.5544 -  
 y1\_output\_loss: 0.1541 - y2\_output\_loss: 0.4038 -  
 y1\_output\_root\_mean\_squared\_error: 0.3910 - y2\_output\_root\_mean\_squared\_error:  
 0.6336 - val\_loss: 2.2182 - val\_y1\_output\_loss: 0.3605 - val\_y2\_output\_loss:  
 1.7943 - val\_y1\_output\_root\_mean\_squared\_error: 0.6088 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.3592  
 Epoch 466/500  
 614/614 [=====] - 0s 128us/sample - loss: 0.4531 -  
 y1\_output\_loss: 0.1238 - y2\_output\_loss: 0.3285 -  
 y1\_output\_root\_mean\_squared\_error: 0.3528 - y2\_output\_root\_mean\_squared\_error:  
 0.5733 - val\_loss: 1.0171 - val\_y1\_output\_loss: 0.1751 - val\_y2\_output\_loss:  
 0.8291 - val\_y1\_output\_root\_mean\_squared\_error: 0.4155 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.9190  
 Epoch 467/500  
 614/614 [=====] - 0s 132us/sample - loss: 0.6345 -  
 y1\_output\_loss: 0.1636 - y2\_output\_loss: 0.4750 -  
 y1\_output\_root\_mean\_squared\_error: 0.4040 - y2\_output\_root\_mean\_squared\_error:  
 0.6865 - val\_loss: 2.1479 - val\_y1\_output\_loss: 0.3288 - val\_y2\_output\_loss:  
 1.7814 - val\_y1\_output\_root\_mean\_squared\_error: 0.5775 -  
 val\_y2\_output\_root\_mean\_squared\_error: 1.3470  
 Epoch 468/500  
 614/614 [=====] - 0s 134us/sample - loss: 0.4970 -  
 y1\_output\_loss: 0.1335 - y2\_output\_loss: 0.3607 -  
 y1\_output\_root\_mean\_squared\_error: 0.3669 - y2\_output\_root\_mean\_squared\_error:  
 0.6020 - val\_loss: 1.0140 - val\_y1\_output\_loss: 0.1589 - val\_y2\_output\_loss:  
 0.8425 - val\_y1\_output\_root\_mean\_squared\_error: 0.3901 -  
 val\_y2\_output\_root\_mean\_squared\_error: 0.9283  
 Epoch 469/500  
 614/614 [=====] - 0s 134us/sample - loss: 0.3876 -



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y1_output_loss: 0.1249 - y2_output_loss: 0.2664 -
y1_output_root_mean_squared_error: 0.3496 - y2_output_root_mean_squared_error:
0.5151 - val_loss: 1.3356 - val_y1_output_loss: 0.2443 - val_y2_output_loss:
1.0970 - val_y1_output_root_mean_squared_error: 0.4736 -
val_y2_output_root_mean_squared_error: 1.0542
Epoch 470/500
614/614 [=====] - 0s 133us/sample - loss: 0.4179 -
y1_output_loss: 0.1315 - y2_output_loss: 0.2858 -
y1_output_root_mean_squared_error: 0.3640 - y2_output_root_mean_squared_error:
0.5343 - val_loss: 1.2147 - val_y1_output_loss: 0.1927 - val_y2_output_loss:
0.9993 - val_y1_output_root_mean_squared_error: 0.4432 -
val_y2_output_root_mean_squared_error: 1.0091
Epoch 471/500
614/614 [=====] - 0s 132us/sample - loss: 0.3822 -
y1_output_loss: 0.1138 - y2_output_loss: 0.2664 -
y1_output_root_mean_squared_error: 0.3386 - y2_output_root_mean_squared_error:
0.5172 - val_loss: 0.9742 - val_y1_output_loss: 0.1972 - val_y2_output_loss:
0.7571 - val_y1_output_root_mean_squared_error: 0.4447 -
val_y2_output_root_mean_squared_error: 0.8812
Epoch 472/500
614/614 [=====] - 0s 134us/sample - loss: 0.4626 -
y1_output_loss: 0.1354 - y2_output_loss: 0.3277 -
y1_output_root_mean_squared_error: 0.3691 - y2_output_root_mean_squared_error:
0.5713 - val_loss: 1.5165 - val_y1_output_loss: 0.2188 - val_y2_output_loss:
1.2903 - val_y1_output_root_mean_squared_error: 0.4618 -
val_y2_output_root_mean_squared_error: 1.1416
Epoch 473/500
614/614 [=====] - 0s 132us/sample - loss: 0.5281 -
y1_output_loss: 0.1417 - y2_output_loss: 0.3840 -
y1_output_root_mean_squared_error: 0.3771 - y2_output_root_mean_squared_error:
0.6212 - val_loss: 1.0554 - val_y1_output_loss: 0.2006 - val_y2_output_loss:
0.8321 - val_y1_output_root_mean_squared_error: 0.4481 -
val_y2_output_root_mean_squared_error: 0.9245
Epoch 474/500
614/614 [=====] - 0s 133us/sample - loss: 0.4572 -
y1_output_loss: 0.1341 - y2_output_loss: 0.3245 -
y1_output_root_mean_squared_error: 0.3666 - y2_output_root_mean_squared_error:
0.5682 - val_loss: 1.0623 - val_y1_output_loss: 0.1843 - val_y2_output_loss:
0.8879 - val_y1_output_root_mean_squared_error: 0.4299 -
val_y2_output_root_mean_squared_error: 0.9367
Epoch 475/500
614/614 [=====] - 0s 132us/sample - loss: 0.4971 -
y1_output_loss: 0.1418 - y2_output_loss: 0.3578 -
y1_output_root_mean_squared_error: 0.3769 - y2_output_root_mean_squared_error:
0.5958 - val_loss: 1.7152 - val_y1_output_loss: 0.2273 - val_y2_output_loss:
1.5137 - val_y1_output_root_mean_squared_error: 0.4577 -
val_y2_output_root_mean_squared_error: 1.2270
Epoch 476/500

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614/614 [=====] - 0s 134us/sample - loss: 0.4940 -
y1_output_loss: 0.1403 - y2_output_loss: 0.3516 -
y1_output_root_mean_squared_error: 0.3745 - y2_output_root_mean_squared_error:
0.5948 - val_loss: 0.9861 - val_y1_output_loss: 0.2048 - val_y2_output_loss:
0.7627 - val_y1_output_root_mean_squared_error: 0.4568 -
val_y2_output_root_mean_squared_error: 0.8817
Epoch 477/500
614/614 [=====] - 0s 132us/sample - loss: 0.4465 -
y1_output_loss: 0.1242 - y2_output_loss: 0.3255 -
y1_output_root_mean_squared_error: 0.3534 - y2_output_root_mean_squared_error:
0.5671 - val_loss: 1.8632 - val_y1_output_loss: 0.2201 - val_y2_output_loss:
1.5943 - val_y1_output_root_mean_squared_error: 0.4756 -
val_y2_output_root_mean_squared_error: 1.2794
Epoch 478/500
614/614 [=====] - 0s 132us/sample - loss: 0.6719 -
y1_output_loss: 0.1572 - y2_output_loss: 0.5255 -
y1_output_root_mean_squared_error: 0.3979 - y2_output_root_mean_squared_error:
0.7166 - val_loss: 2.8040 - val_y1_output_loss: 0.2841 - val_y2_output_loss:
2.5063 - val_y1_output_root_mean_squared_error: 0.5428 -
val_y2_output_root_mean_squared_error: 1.5841
Epoch 479/500
614/614 [=====] - 0s 137us/sample - loss: 0.4347 -
y1_output_loss: 0.1257 - y2_output_loss: 0.3065 -
y1_output_root_mean_squared_error: 0.3542 - y2_output_root_mean_squared_error:
0.5561 - val_loss: 0.9278 - val_y1_output_loss: 0.1497 - val_y2_output_loss:
0.7661 - val_y1_output_root_mean_squared_error: 0.3857 -
val_y2_output_root_mean_squared_error: 0.8826
Epoch 480/500
614/614 [=====] - 0s 131us/sample - loss: 0.4402 -
y1_output_loss: 0.1430 - y2_output_loss: 0.2971 -
y1_output_root_mean_squared_error: 0.3793 - y2_output_root_mean_squared_error:
0.5443 - val_loss: 1.3494 - val_y1_output_loss: 0.3202 - val_y2_output_loss:
1.0463 - val_y1_output_root_mean_squared_error: 0.5419 -
val_y2_output_root_mean_squared_error: 1.0275
Epoch 481/500
614/614 [=====] - 0s 131us/sample - loss: 0.7879 -
y1_output_loss: 0.1900 - y2_output_loss: 0.5924 -
y1_output_root_mean_squared_error: 0.4373 - y2_output_root_mean_squared_error:
0.7724 - val_loss: 1.0417 - val_y1_output_loss: 0.2336 - val_y2_output_loss:
0.8027 - val_y1_output_root_mean_squared_error: 0.4917 -
val_y2_output_root_mean_squared_error: 0.8944
Epoch 482/500
614/614 [=====] - 0s 132us/sample - loss: 0.5565 -
y1_output_loss: 0.1416 - y2_output_loss: 0.4100 -
y1_output_root_mean_squared_error: 0.3779 - y2_output_root_mean_squared_error:
0.6432 - val_loss: 1.0573 - val_y1_output_loss: 0.1971 - val_y2_output_loss:
0.8463 - val_y1_output_root_mean_squared_error: 0.4417 -
val_y2_output_root_mean_squared_error: 0.9286

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Epoch 483/500  
614/614 [=====] - 0s 142us/sample - loss: 0.4610 -  
y1\_output\_loss: 0.1151 - y2\_output\_loss: 0.3432 -  
y1\_output\_root\_mean\_squared\_error: 0.3402 - y2\_output\_root\_mean\_squared\_error:  
0.5876 - val\_loss: 0.9064 - val\_y1\_output\_loss: 0.1634 - val\_y2\_output\_loss:  
0.7427 - val\_y1\_output\_root\_mean\_squared\_error: 0.3986 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.8646  
Epoch 484/500  
614/614 [=====] - 0s 136us/sample - loss: 0.4387 -  
y1\_output\_loss: 0.1199 - y2\_output\_loss: 0.3163 -  
y1\_output\_root\_mean\_squared\_error: 0.3472 - y2\_output\_root\_mean\_squared\_error:  
0.5640 - val\_loss: 1.1424 - val\_y1\_output\_loss: 0.1849 - val\_y2\_output\_loss:  
0.9418 - val\_y1\_output\_root\_mean\_squared\_error: 0.4255 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9805  
Epoch 485/500  
614/614 [=====] - 0s 138us/sample - loss: 0.3943 -  
y1\_output\_loss: 0.1181 - y2\_output\_loss: 0.2913 -  
y1\_output\_root\_mean\_squared\_error: 0.3444 - y2\_output\_root\_mean\_squared\_error:  
0.5250 - val\_loss: 3.7284 - val\_y1\_output\_loss: 0.2040 - val\_y2\_output\_loss:  
3.4935 - val\_y1\_output\_root\_mean\_squared\_error: 0.4370 -  
val\_y2\_output\_root\_mean\_squared\_error: 1.8808  
Epoch 486/500  
614/614 [=====] - 0s 140us/sample - loss: 0.5998 -  
y1\_output\_loss: 0.1429 - y2\_output\_loss: 0.4528 -  
y1\_output\_root\_mean\_squared\_error: 0.3784 - y2\_output\_root\_mean\_squared\_error:  
0.6757 - val\_loss: 0.9143 - val\_y1\_output\_loss: 0.1939 - val\_y2\_output\_loss:  
0.7104 - val\_y1\_output\_root\_mean\_squared\_error: 0.4442 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.8467  
Epoch 487/500  
614/614 [=====] - 0s 136us/sample - loss: 0.4079 -  
y1\_output\_loss: 0.1233 - y2\_output\_loss: 0.2861 -  
y1\_output\_root\_mean\_squared\_error: 0.3499 - y2\_output\_root\_mean\_squared\_error:  
0.5343 - val\_loss: 1.1907 - val\_y1\_output\_loss: 0.2602 - val\_y2\_output\_loss:  
0.9270 - val\_y1\_output\_root\_mean\_squared\_error: 0.4872 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9764  
Epoch 488/500  
614/614 [=====] - 0s 138us/sample - loss: 0.4470 -  
y1\_output\_loss: 0.1173 - y2\_output\_loss: 0.3279 -  
y1\_output\_root\_mean\_squared\_error: 0.3429 - y2\_output\_root\_mean\_squared\_error:  
0.5740 - val\_loss: 1.1375 - val\_y1\_output\_loss: 0.1973 - val\_y2\_output\_loss:  
0.9531 - val\_y1\_output\_root\_mean\_squared\_error: 0.4311 -  
val\_y2\_output\_root\_mean\_squared\_error: 0.9755  
Epoch 489/500  
614/614 [=====] - 0s 129us/sample - loss: 0.4483 -  
y1\_output\_loss: 0.1259 - y2\_output\_loss: 0.3213 -  
y1\_output\_root\_mean\_squared\_error: 0.3564 - y2\_output\_root\_mean\_squared\_error:  
0.5668 - val\_loss: 1.0519 - val\_y1\_output\_loss: 0.1890 - val\_y2\_output\_loss:  
0.8699 - val\_y1\_output\_root\_mean\_squared\_error: 0.4400 -

```

val_y2_output_root_mean_squared_error: 0.9265
Epoch 490/500
614/614 [=====] - 0s 136us/sample - loss: 0.3674 -
y1_output_loss: 0.1172 - y2_output_loss: 0.2590 -
y1_output_root_mean_squared_error: 0.3343 - y2_output_root_mean_squared_error:
0.5057 - val_loss: 1.1944 - val_y1_output_loss: 0.2810 - val_y2_output_loss:
0.9157 - val_y1_output_root_mean_squared_error: 0.5113 -
val_y2_output_root_mean_squared_error: 0.9659
Epoch 491/500
614/614 [=====] - 0s 129us/sample - loss: 0.6108 -
y1_output_loss: 0.1534 - y2_output_loss: 0.4556 -
y1_output_root_mean_squared_error: 0.3913 - y2_output_root_mean_squared_error:
0.6766 - val_loss: 1.0412 - val_y1_output_loss: 0.1864 - val_y2_output_loss:
0.8552 - val_y1_output_root_mean_squared_error: 0.4350 -
val_y2_output_root_mean_squared_error: 0.9230
Epoch 492/500
614/614 [=====] - 0s 129us/sample - loss: 0.4090 -
y1_output_loss: 0.1127 - y2_output_loss: 0.3005 -
y1_output_root_mean_squared_error: 0.3365 - y2_output_root_mean_squared_error:
0.5439 - val_loss: 2.2604 - val_y1_output_loss: 0.2123 - val_y2_output_loss:
2.0059 - val_y1_output_root_mean_squared_error: 0.4585 -
val_y2_output_root_mean_squared_error: 1.4318
Epoch 493/500
614/614 [=====] - 0s 129us/sample - loss: 0.3791 -
y1_output_loss: 0.1213 - y2_output_loss: 0.2559 -
y1_output_root_mean_squared_error: 0.3485 - y2_output_root_mean_squared_error:
0.5075 - val_loss: 0.9313 - val_y1_output_loss: 0.1944 - val_y2_output_loss:
0.7205 - val_y1_output_root_mean_squared_error: 0.4438 -
val_y2_output_root_mean_squared_error: 0.8570
Epoch 494/500
614/614 [=====] - 0s 129us/sample - loss: 0.4079 -
y1_output_loss: 0.1261 - y2_output_loss: 0.2842 -
y1_output_root_mean_squared_error: 0.3549 - y2_output_root_mean_squared_error:
0.5310 - val_loss: 1.4137 - val_y1_output_loss: 0.3051 - val_y2_output_loss:
1.0952 - val_y1_output_root_mean_squared_error: 0.5622 -
val_y2_output_root_mean_squared_error: 1.0477
Epoch 495/500
614/614 [=====] - 0s 132us/sample - loss: 0.4116 -
y1_output_loss: 0.1126 - y2_output_loss: 0.2956 -
y1_output_root_mean_squared_error: 0.3370 - y2_output_root_mean_squared_error:
0.5459 - val_loss: 0.9011 - val_y1_output_loss: 0.1699 - val_y2_output_loss:
0.7240 - val_y1_output_root_mean_squared_error: 0.4020 -
val_y2_output_root_mean_squared_error: 0.8600
Epoch 496/500
614/614 [=====] - 0s 137us/sample - loss: 0.3721 -
y1_output_loss: 0.1176 - y2_output_loss: 0.2515 -
y1_output_root_mean_squared_error: 0.3441 - y2_output_root_mean_squared_error:
0.5037 - val_loss: 1.0211 - val_y1_output_loss: 0.1869 - val_y2_output_loss:

```

```

0.8368 - val_y1_output_root_mean_squared_error: 0.4173 -
val_y2_output_root_mean_squared_error: 0.9203
Epoch 497/500
614/614 [=====] - 0s 134us/sample - loss: 0.3376 -
y1_output_loss: 0.1086 - y2_output_loss: 0.2263 -
y1_output_root_mean_squared_error: 0.3310 - y2_output_root_mean_squared_error:
0.4775 - val_loss: 0.9966 - val_y1_output_loss: 0.1647 - val_y2_output_loss:
0.8200 - val_y1_output_root_mean_squared_error: 0.4087 -
val_y2_output_root_mean_squared_error: 0.9108
Epoch 498/500
614/614 [=====] - 0s 137us/sample - loss: 0.4790 -
y1_output_loss: 0.1482 - y2_output_loss: 0.3295 -
y1_output_root_mean_squared_error: 0.3856 - y2_output_root_mean_squared_error:
0.5747 - val_loss: 1.5040 - val_y1_output_loss: 0.2791 - val_y2_output_loss:
1.2501 - val_y1_output_root_mean_squared_error: 0.5097 -
val_y2_output_root_mean_squared_error: 1.1154
Epoch 499/500
614/614 [=====] - 0s 138us/sample - loss: 0.6017 -
y1_output_loss: 0.1761 - y2_output_loss: 0.4415 -
y1_output_root_mean_squared_error: 0.4100 - y2_output_root_mean_squared_error:
0.6585 - val_loss: 2.7196 - val_y1_output_loss: 0.6603 - val_y2_output_loss:
2.0525 - val_y1_output_root_mean_squared_error: 0.8211 -
val_y2_output_root_mean_squared_error: 1.4302
Epoch 500/500
614/614 [=====] - 0s 135us/sample - loss: 0.7111 -
y1_output_loss: 0.1884 - y2_output_loss: 0.5168 -
y1_output_root_mean_squared_error: 0.4359 - y2_output_root_mean_squared_error:
0.7219 - val_loss: 0.8892 - val_y1_output_loss: 0.1799 - val_y2_output_loss:
0.6990 - val_y1_output_root_mean_squared_error: 0.4263 -
val_y2_output_root_mean_squared_error: 0.8411

```

## 1.7 Evaluate the Model and Plot Metrics

```

[7]: # Test the model and print loss and mse for both outputs
loss, Y1_loss, Y2_loss, Y1_rmse, Y2_rmse = model.evaluate(x=norm_test_X,
    ↪y=test_Y)
print("Loss = {}, Y1_loss = {}, Y1_mse = {}, Y2_loss = {}, Y2_mse = {}".
    ↪format(loss, Y1_loss, Y1_rmse, Y2_loss, Y2_rmse))

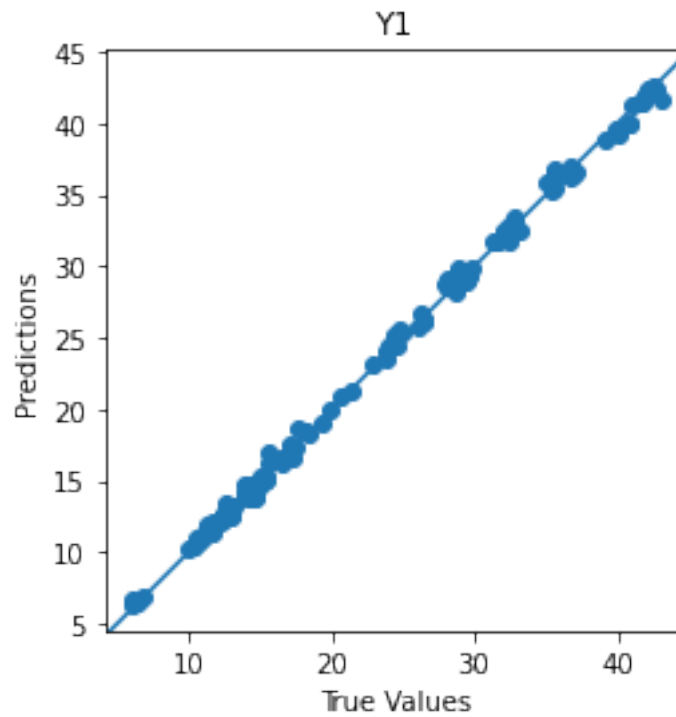
```

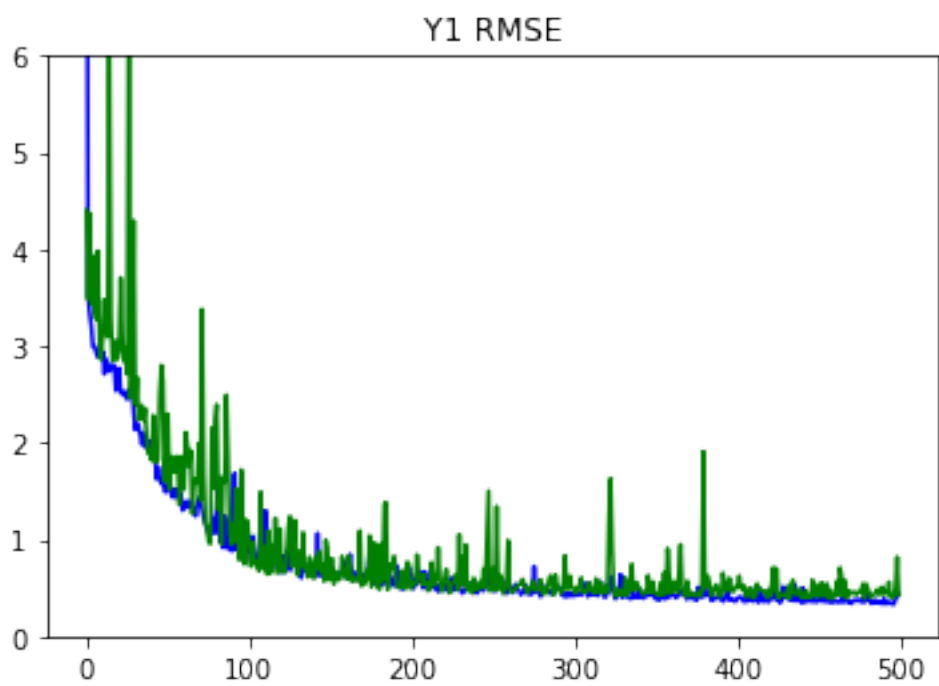
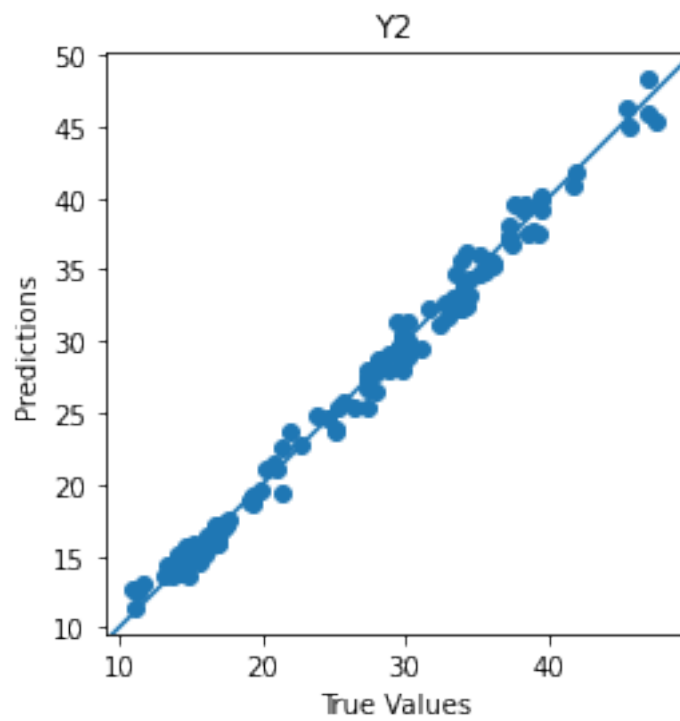
```

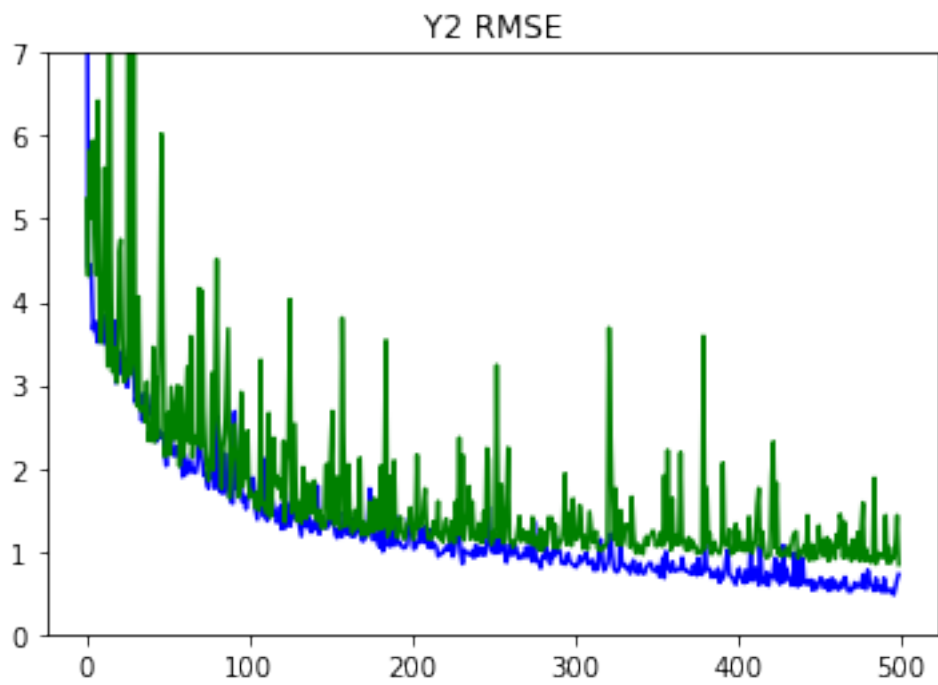
154/154 [=====] - 0s 32us/sample - loss: 0.8892 -
y1_output_loss: 0.1807 - y2_output_loss: 0.7050 -
y1_output_root_mean_squared_error: 0.4263 - y2_output_root_mean_squared_error:
0.8411
Loss = 0.8892013051293113, Y1_loss = 0.18072137236595154, Y1_mse =
0.4263450503349304, Y2_loss = 0.7050455808639526, Y2_mse = 0.8410893082618713

```

```
[8]: # Plot the loss and mse
Y_pred = model.predict(norm_test_X)
plot_diff(test_Y[0], Y_pred[0], title='Y1')
plot_diff(test_Y[1], Y_pred[1], title='Y2')
plot_metrics(metric_name='y1_output_root_mean_squared_error', title='Y1 RMSE',
             ylim=6)
plot_metrics(metric_name='y2_output_root_mean_squared_error', title='Y2 RMSE',
             ylim=7)
```







[ ]: